

# FLIGHT

&  
The AIRCRAFT  
ENGINEER.

First Aero Weekly in the World

Founder and Editor: STANLEY SPOONER

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport

OFFICIAL ORGAN OF THE ROYAL AERO CLUB OF THE UNITED KINGDOM

No. 521. (No. 51, Vol. X.)

— DECEMBER 19, 1918

Weekly, Price 6d.  
Post Free, 7d.

## Flight

and The Aircraft Engineer.

Editorial Office: 36, GREAT QUEEN STREET, KINGSWAY, W.C. 2.

Telegrams: Truditur, Westcent, London. Telephone: Gerrard 1828.

Annual Subscription Rates, Post Free:

United Kingdom .. 28s. 6d. Abroad .. .. 33s. 6d.

These rates are subject to any alteration found necessary under war conditions.

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## EDITORIAL COMMENT.



ONLY a week or two ago we said in these columns that there was no physical reason why the flight from England to India should not be undertaken to-morrow. At that time we had no knowledge of a near date being fixed to carry out such a flight, yet by the time these lines appear in print

it is more than possible that the journey will have been successfully completed. Gen. McEwen, who has

### Recent Long-Distance Flights

been appointed G.O.C. Royal Air Force in India, left England last week in a Handley Page machine for his new headquarters at Delhi, piloted by Maj. Maclaren and Capt. Halley. The

machine carries six passengers for the journey, which it is hoped to complete in seven stages. Starting from Martlesham, near Ipswich, the first stage was across the Channel, thence to Miramas, near Marseilles, 650 miles from the starting point. The third stage is from Miramas to Otranto, 880 miles. From Otranto the next journey is to Cairo, 1,170 miles; thence to Baghdad, 875 miles; Bandar-Abbas, 870 miles; and Karachi, 692 miles. Assuming the latter place to be safely reached, the final stage is to Delhi,

a total distance of rather more than 5,700 miles. The machine itself is of the type which was designed for the bombing of Berlin. It has a span of 127 ft., and weighs with fuel and passengers about 27,000 lbs. Four Rolls-Royce "Eagles" supply the motive power and drive the machine at about 80 miles an hour in calm weather, while the fuel supply carried is enough for a 16-hours' flight. There seems, therefore, to be no mechanical reason why the machine should not easily compass the journey within the week from the time of starting. As a matter of fact, and bearing in mind what has already been done during the War in long-distance flights, the odds seem to be well in favour of success, particularly when we remember that Maj. Maclaren is one of our most experienced long-distance pilots, and has twice flown from England to Egypt in machines not as well suited to the task he now has in hand. We have, too, to assist in weighing the possibilities of success, the recent flight of Gen. Salmond from Cairo to Baghdad, which does not appear to have attracted as much attention as it might have done. This flight was accomplished purely in the way of routine and was not specially undertaken merely for the sake of demonstrating what can be done by the combination of modern aeroplane and skilled pilot. Even if it had, it would nevertheless have been quite a wonderful feat, although the records that have been made during the War, and are only just beginning to be disclosed now that the censor is more or less moribund, have made us, perhaps, a little *blasé* in these matters.

The principal significance of such flights lies, of course, in their bearing on the future of commercial aviation. It has now been demonstrated that it is possible to fly, quite in the ordinary way of duty, from Cairo to Baghdad and to take almost literally weeks off the time occupied in accomplishing the journey by any other means of transport, and to do it, moreover, without a single hitch or set-back. Organisation there was, naturally, since it would have been the height of folly to attempt such a journey until the necessary supplies of fuel and spares had first been provided along the line of route, and this organisation just as naturally took a certain amount of time to complete. It is just as well to point this out, because it will do no good to the movement to try to persuade people that the aeroplane is a machine which can be sent off haphazard to the ends of the earth at a moment's notice and without the slightest anterior



preparation. On the contrary, the organisation of aerial routes for commercial purposes must be as meticulous as that of any other transport system, whether by land or sea, and unless that fact is fully recognised by the would-be promoters of aerial services we shall be asking for failure, abject and complete. It has seemed to us to be wise to make this point, since we are able to discern in certain quarters a disposition to think that it is possible to chance things, and that it will do to inaugurate services on the principle of "you get there, or you don't." We need hardly say that this will not do at all, and we should be more than sorry if the really wonderful flights that we hear about almost every day now should give rise to the impression that all that is wanted to fly from London to New York is an aeroplane capable of covering the distance. That, of course, is the first necessity, but there is much more beyond.

#### The Future of Commercial Aviation

In the matter of organisation for commercial services, "FLIGHT" has been at some pains to ascertain the views of certain of our leading constructors, and these all seem to be agreed that the success of such services is now much more a question of efficiency of organisation than of the purely mechanical aspect. Engines and machines have now arrived at a stage of such relative perfection that the physical limitations of flight have very little bearing. That is to say, a mail and passenger service from this country to the Antipodes is far more a matter of proper organisation than of the machine itself. Interviewed on the subject of organisation, one leading constructor expressed the view that before an air service is allowed to start the Government should make certain that it is well financed and that the organisation is such that the risk of accident is reduced to the absolute minimum. To effect the latter, it will be necessary that all machines shall follow well defined air routes and that landing grounds—not necessarily aerodromes, but grounds large enough for safe landing—shall be established at intervals of ten miles or so. As he pointed out, if such grounds are established, a pilot who encounters engine trouble could glide down to the nearest landing ground, telephone to his depôt and report that he was down at ground number so-and-so. A fresh machine would be sent, mails or passengers transferred and the journey completed with very little delay. On the other hand, what would happen in the absence of such official landing grounds? Taking the example of a cross-Channel mail service, we can imagine a machine being compelled to land somewhere south-east of Amiens. The machine may be damaged in landing, but, even if it is not, there is the possibility that the engine trouble cannot be put right on the spot. The pilot, therefore, has to tramp X miles across country to the nearest telephone, ring up Paris and report that he is down "somewhere in France." The relief machine first of all has to find him and then look for a suitable landing ground, transfer mails and passengers and then get on to Paris, where it will probably arrive hours late, the total time occupied from London being greater than the journey would have taken by train and boat. It need scarcely be said that a very few experiences of this sort would be enough to damn any aerial services and to set back development almost

indefinitely. Naturally, we are deeply concerned to see development carried out as rapidly as possible, but we are very much of the opinion that it is far better to "ca' canny" now, even at the expense of considerable delay, and to proceed first with the essential organisation before being in too much of a hurry to start services which are not reliable. It must be borne in mind that one failure to arrive within a reasonable margin of the time scheduled will do more harm to development than 20 arrivals ahead of time would help. In the case of a new means of transport like aviation certainty is everything. At the present time the man in the street has a perfectly open mind in the matter. He knows that flying is easy enough, and he believes that it is at least reasonably safe, but he wants the evidence of successful pioneer services before he is going to commit himself to using it as a matter of habit. Therefore, we may say that the first few services to be established will be in the nature of propaganda services, and unless our propaganda is successful it is abundantly clear that we shall not secure the faith and the support of the public on whom the success of the whole movement naturally depends.

Some of our constructors do not appear to be over optimistic in the matter of aerial services in these islands, because distances are short and the saving of time effected by aerial transport is not great enough to be of very material effect, and again there is the trouble of fog. There may be something in the argument, although the possible saving of time in transport by even hours in these days is often of great moment. Between the south of England and the remoter districts of Scotland and Ireland at least it is obvious that very substantial saving could be effected in the case of mail and passenger services. Whilst in the matter of fog, experience will evolve means of surmounting this serious obstacle.

The argument might suggest there is no future for commercial aviation. But, on the contrary, we are more convinced than ever that there is an enormous future for it, but the greatness of that future does not lie, we think, in short distance services within the confines of the British Islands. Later on, when the carriage of comparatively bulky goods in the air is possible there will be a great internal field to be exploited, but for the present at any rate the establishment of successful passenger services in England will probably go a little slowly. We must never forget that for a service to succeed it must be absolutely regular, and not an affair in which a machine *may* start to-morrow or may not, as the case may be. Commercial aviation, to be commercial, cannot be run like a pleasure-steamer service to Margate, "wind and weather permitting," else the public will not believe in it, and the essential support will be lacking. It is in the development of international services that the immediate future seems to hold out the most promise. After all, however, it seems to us that the whole future is more or less bound up in the sort of propaganda work that is done now. Even when we have admitted all the limitations to which aircraft are subject, it is clear that there is still an enormous field for development if the matter is handled aright, and if the educational process is begun properly and prosecuted assiduously, as we have so often advocated in the past, there is no fear for the future of the movement.



### The N.P.L. and its War Work

The censorship has very rightly drawn a veil over the work of the National Physical Laboratory during the period of the War, but now that hostilities have ceased it does not seem too much to ask that the results of that work should, so far as they are likely to prove interesting or instructive, be given to the public. We ourselves have not very much more detail knowledge of what has been done at Teddington during the past four years than the veriest laymen, but we are fully aware that without the enormous amount of research and experiment carried out by Sir Richard Glazebrook and his staff the art of aircraft construction could not have possibly attained to the high standard of technical excellence it has in fact reached. Quite properly all the work and all the results were treated as highly confidential so long as we were at war. Its essentials were placed at the disposal of constructors in cases where it was to the public benefit that information should be given, and we believe that it is no small thanks to the staff of the N.P.L. that we were able to establish the technical superiority over the enemy that we held at the end of the War. Now that there is no more war and the restrictions on experiment and design have been, or are about to be, removed, it is necessary in the interests of British aviation that all who are engaged in or interested in the work of development should be in possession of the very latest ascertained data in connection with design and construction. We trust, therefore, that the powers that be will see their way to an early publication of the most important results of the work which has been carried on during the period of the War.

### What is the Game?

We are all talking about the development of commercial aviation. Even a Government Committee has pronounced in favour of an early start, and has expressed the considered opinion that it will not do for this country to be left at the post in the coming race of nations. Yet every possible bar is placed on civilian flying, and no start can be made until the satraps of the Air Ministry can be got to see that we cannot possibly get going until the restrictions of D.O.R.A. have been removed, as they might well be at once. Col. Norton Griffiths, in the course of the recent election campaign, proposed to fly from London to Wednesbury and back, in order to address a meeting at the latter place, and had made all his arrangements, when the Air Ministry refused to allow the flight to take place. Col. Norton Griffiths thereupon announced that D.O.R.A. or no D.O.R.A., he was prepared to make the flight and risk the consequences, but, unfortunately, the chosen day turned out to be wet and utterly unsuitable for the journey, which was, therefore, abandoned. We must say that we are profoundly disappointed that the weather was unkind, for we should very much have

liked to have seen the matter tested. Probably Sir John Norton Griffiths would have been convicted and fined if he had actually flown. It is even possible that his machine would have been treated as a hostile craft and have been machine-gunned in the air! But at any rate we should have had a chance of finding out a little more about the present attitude of the powers that be and why they are so reluctant to part with even a moiety of the powers derived from that out-of-date female D.O.R.A.

Again, a correspondent of the *Daily Mail*, who signs himself "Pilot," writes to that journal and says:—

"I have purchased my own aeroplane, obtained the necessary permit to fly from the Air Council, and still I am unable to fly. The Air Board gravely informed me that no new aerodromes were to be started; also that no civilian may fly from an R.A.F. aerodrome.

"Therefore what I would like to know is: What is the use of the Air Council permit? And why may I not earn my living by flying? I have many pupils ready to learn, and yet I cannot make a start."

What does the Air Ministry mean when it says that no more aerodromes are to be started and who told it so? If it means that no more *military* aerodromes are projected, well and good, but if it means—and we can only assume it does—that no more civilian flying grounds are to be started, then, to speak quite plainly and in the vernacular, the Ministry is talking through its hat. To our way of thinking, what is in the minds of the people who are responsible for the statement in question is the intention that all flying is to be a monopoly of themselves. That not only is the State to retain control of construction in order to conserve the safety of the public, but that the whole industry, active and constructional, is to remain fettered and monopolistic. It is abundantly clear that there are powerful influences at work, directed to the prevention of the "crashing" of the comfortable jobs the War has created at the Hotel Bolo and its many annexes. In a word, there are large numbers of officers and officials who are being paid salaries they could never command in civilian life, and they intend that they shall continue to be paid them if there is any human possibility of so arranging it. Therefore, they are determinedly placing every obstacle in the way of civil development and they will continue to do so until they are kicked out by overwhelming force of public opinion. As we have pointed out many times, the principal difficulty we have to deal with during the period of transition from war to peace is that of getting rid of the bureaucratic limpets who have fastened themselves on the public funds during the War. They may, many of them, have been essential so long as we were at war, but they are utterly useless to the country now the War is over, and they must be plainly told that as soon as the essential clearing up work is done they must go—and the shorter the clearing-up process can be made the better for the country.

### Boy Mechanics Wanted

THE Royal Air Force is now open to receive a limited number of boys of good physique, with experience of metal or woodworking trades, between 16 and 17 years of age, for training as Air Mechanics. Enlistment will be for eight years' service and four years with the Reserve. Application for full particulars should be made to the nearest Royal Air Force Reception Depot, or to the local Labour Exchange. The following are the Royal Air Force Reception Depots:—  
40, Upper Brook Street, Mayfair, London, W. 1; 8, Tyn-

dall's Park Road, Bristol; 12, Newport Road, Cardiff; Carlton Chambers, 35, Paradise Street, Birmingham; 8, George Street, Nottingham; 12 Abercromby Square, Liverpool; The Mount, Springfield Mount, Leeds; 10, Sydenham Terrace, North Road, Newcastle-on-Tyne; 9, Somerset Place, Sauchiehall Street, Glasgow.

### R.A.F. and Canadian Universities

MCGILL and Queen's Universities have accepted the offer of the Royal Air Force to supply aeroplanes for instructional purposes.



# THE L.V.G. TWO-SEATER BIPLANES

[Issued by Technical Department (Aircraft Production), Ministry of Munitions.]

THIS report is concerned with two L.V.G. biplanes, of which one is of the C.V. type, while the other, a C.VI. type machine, is of later design, embodying certain alterations and improvements. The C.V. machine is allotted G/3Bde/5, and the C.VI. which was brought down near Proven on August 2nd by two S.E. 5's, piloted by Lieuts. Gordon and Gould, is allotted G/2 Bde/21.

Any description which follows and is not definitely stated to apply to either model, must be read as appertaining to the C.VI type.

The C.V. machine was only slightly damaged, and has been put into flying order, but the C.VI. has suffered severely, and it must be stated that on this account the G.A. drawings are not guaranteed to be of absolute accuracy in every respect. The greatest care has, however, been taken in their preparation, and only features of rigging such as dihedral and stagger (besides the tail planes, which are in a very fragmentary condition) are at all doubtful. In matters of detail the drawings are accurate.

Some leading particulars of both machines are given below:—

	C.V. Type.	C.VI. Type.
Weight empty ..	2,188 lbs.	2,090 lbs.
Total weight ..	3,141 lbs.—	3,036 lbs.
Area of upper wings (with ailerons) ..	238.4 sq. ft.	196.0 sq. ft.
Area of lower wings ..	190.4 sq. ft.	160.0 sq. ft.
Total area of wings ..	428.8 sq. ft.	356.0 sq. ft.
Loading per sq. ft. of wing surface ..	7.3 lbs.	8.5 lbs.
Area of aileron, each ..	13.6 sq. ft.	11.2 sq. ft.
Area of balance of aileron ..	0.4 sq. ft.	0.0 sq. ft.
Area of tail plane ..	21.6 sq. ft.	28.0 sq. ft.
Area of fin ..	5.2 sq. ft.	5.2* sq. ft.
Area of rudder ..	6.8 sq. ft.	6.8* sq. ft.
Area of balance of rudder ..	0.6 sq. ft.	0.6* sq. ft.
Area of elevators ..	20.8 sq. ft.	16.0 sq. ft.
Area of balance of elevator (one) ..	1.2 sq. ft.	0.8 sq. ft.
Total weight per h.p. ..	13.7 lbs.	13.2 lbs.
Crew ..	2—Pilot and observer.	
Armament ..	1 Spandau and 1 Parabellum gun.	
Engine ..	230 h.p. Benz.	
Petrol capacity ..	52½ gals.	52½ gals.

\* Assumed same as C.V. type.

## Wings.

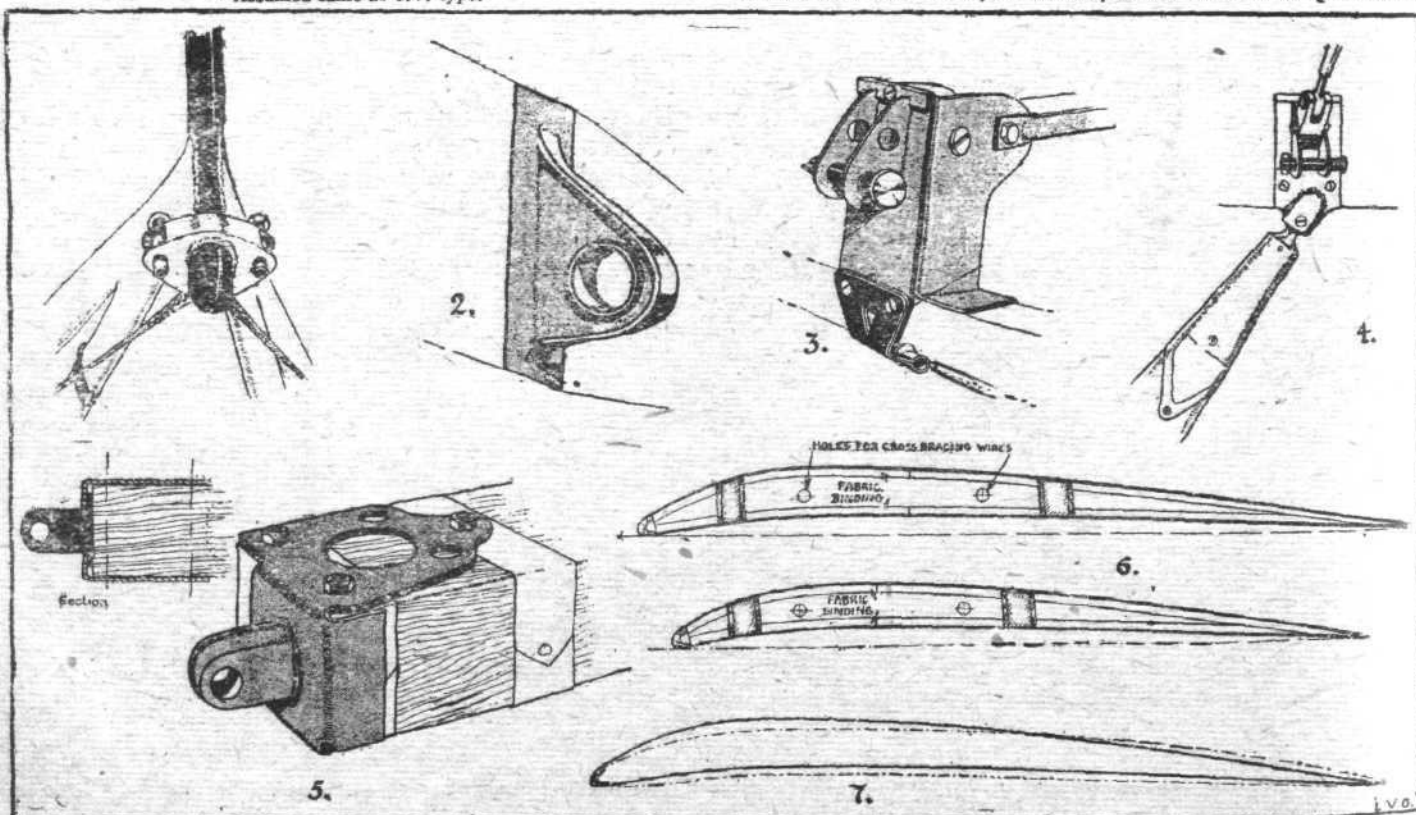
There are several important differences between the arrangement of main planes of the two models, as will be seen by referring to the G.A. drawings.

The wings of the C.V. L.V.G. are without stagger, and are not swept back, but both upper and lower planes are set at a dihedral angle, this being 1° for the upper, and 2° for the lower wings. The lower planes are smaller all round than the upper, and have rounded tips. The upper planes only have ailerons, which are of equal chord throughout their length, and are balanced. These planes also follow what was, until recently, the usual enemy practice, by being joined at their roots to a central *cabane*. There is, therefore, no horizontal centre section in this aeroplane, except for the 3-ply box (about 4 in. wide), which surrounds the horizontal tube of the *cabane*. For improving the view, the upper plane is cut away over the pilot's cockpit. Relative to the crankshaft the upper wing has a constant angle of incidence of 5°. That of the lower wing is the same, except at the tip, where the angle is washed out to 4°, and at the root to 4½°.

Both upper and lower wings are attached to the body by the same general means, this being adapted to the particular positions and conditions of each joint. In the case of the upper planes, the *cabane* has lugs welded to its upper side at both ends. Fig. 1 shows the fitting at the forward end, and the pierced lug on the wing spar (see Fig. 2) fits into the fork. The same type of hinge pin is used for all wing joints, and for the aileron hinges also. It consists of a short length of steel tube, carrying at one end some form of stop, and at its other end a slot in which a short rectangular piece of steel is free to rotate, the steel piece being pivoted at its centre. Thus, when the steel piece is placed parallel to the tube, the whole fitting can be passed through any hole which will accommodate the tube, but when the piece is placed at right angles to the tube axis, the tube cannot be withdrawn through a small hole. A helical spring ensures that the steel piece shall be pressed against the hole, and not be free to slip into the parallel position.

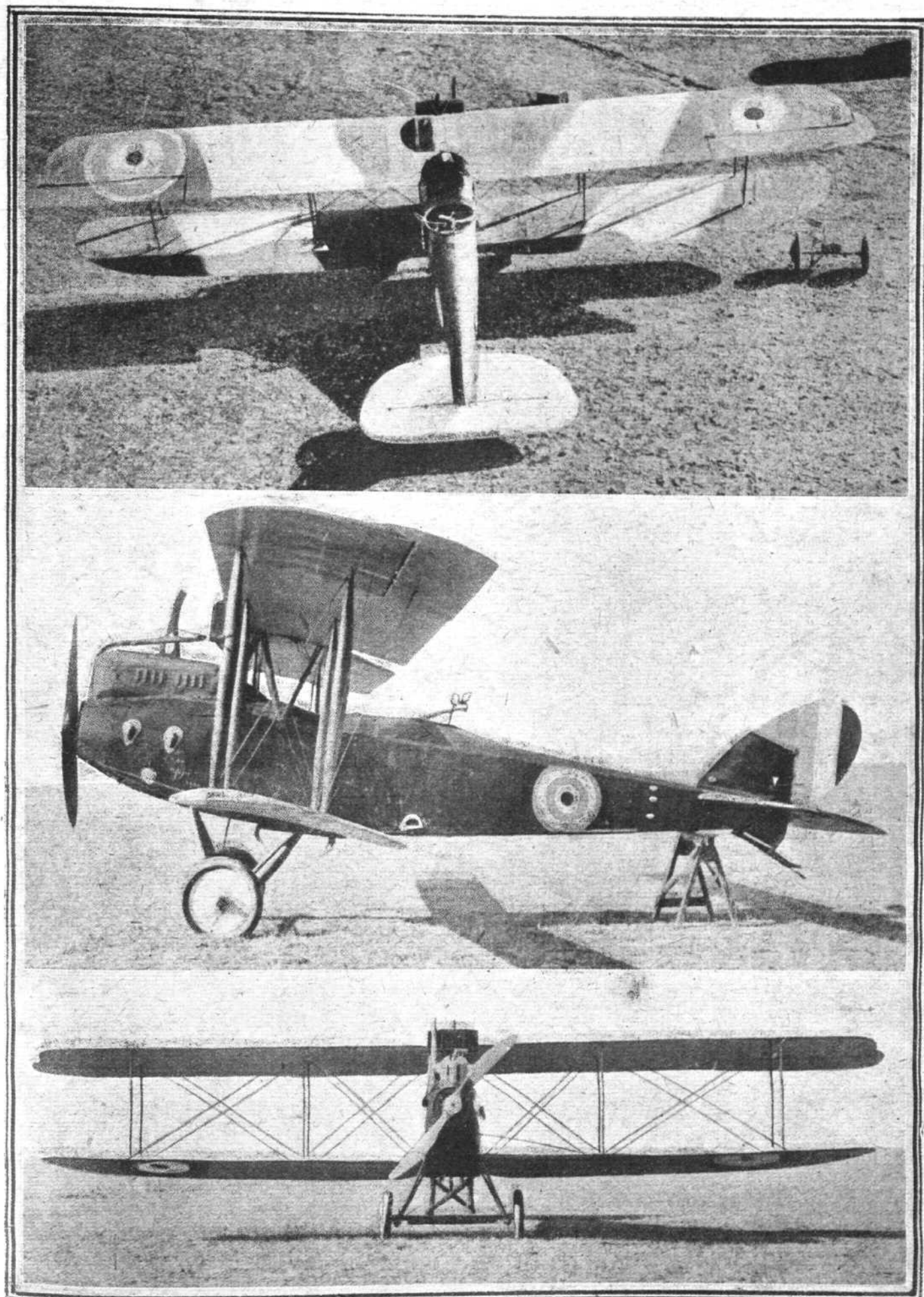
The lower wing attachments are very similar, as will be gathered from Figs. 3 and 4, which show respectively the front and rear joints, and this plan has not been changed on the C.VI. type of L.V.G., except that the lug on the wing spar is now fashioned as shown in Fig. 5.

In the later model—the C.VI—the planes are of the same general shape, but important changes are remarked. The radiator has been moved from the position it occupied on the C.V. (see G.A. drawings), and is now built into the horizontal centre section. It is, of course, common German practice to



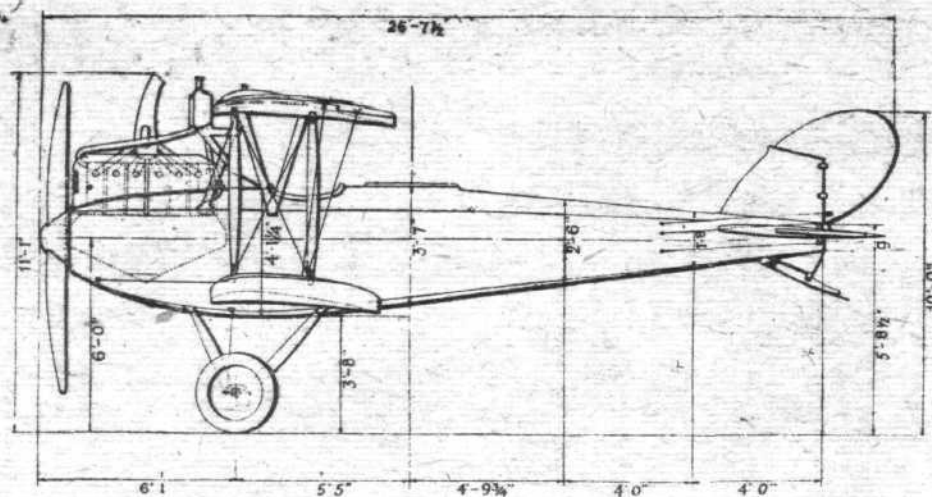
Some L.V.G. Constructional Details.—1. Spar fitting on *cabane* of the Type C.V. L.V.G.; 2. Lug on spar engaging with fitting in 1; 3. Bottom front spar joint; 4. Bottom rear spar joint; 5. Wing spar lug on the C.VI. Type; 6. Upper and lower wing sections of C.VI.; 7. C.VI. upper section with R.A.F. 14 section superimposed.



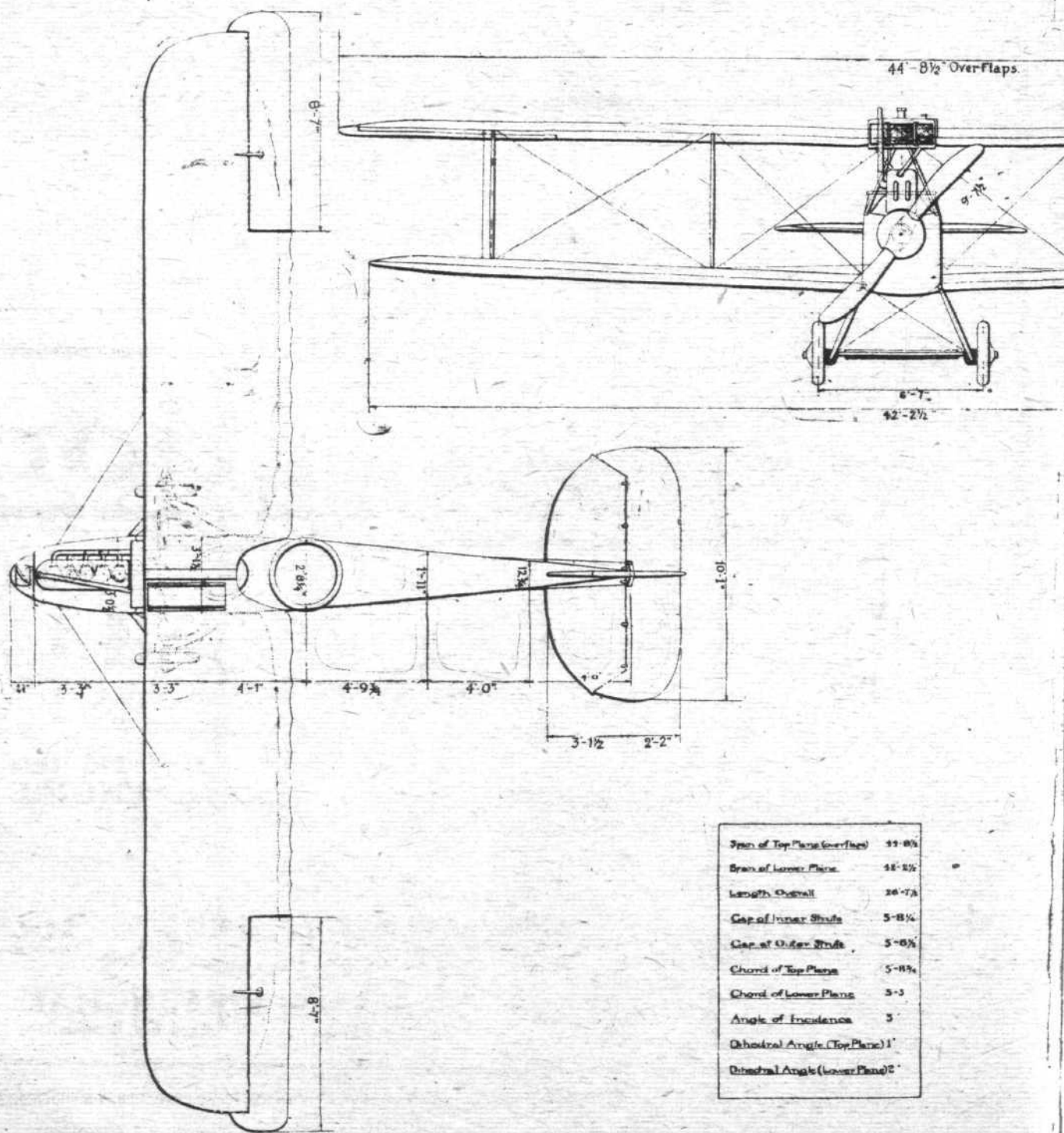
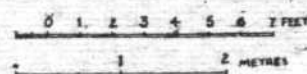


Three views of the Type C, V L.V.G. Biplane.





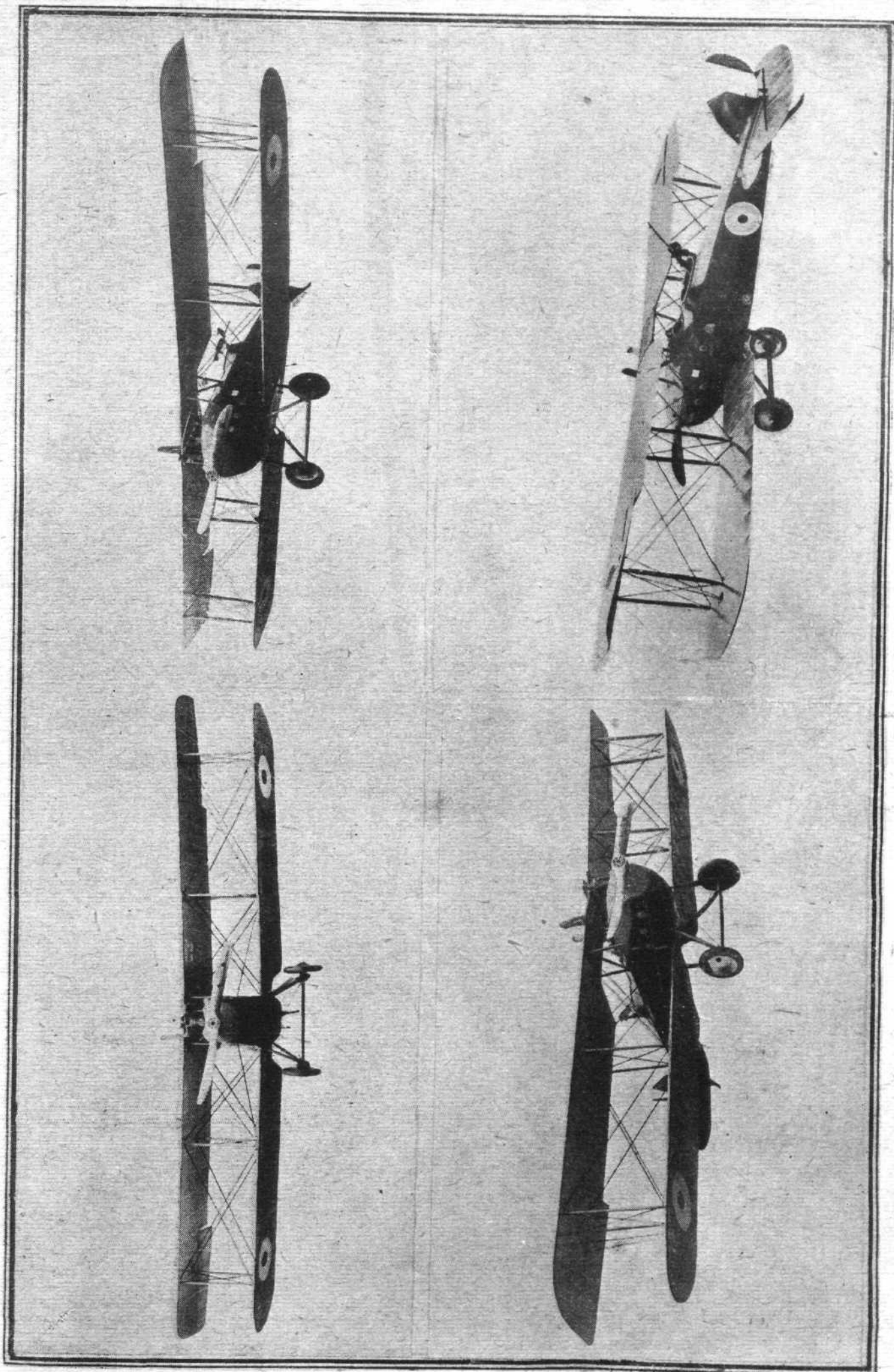
**L.V.G.**  
**CV TYPE BIPLANE:**



Span of Top Plane (over-flaps)	44'-8 1/2"
Span of Lower Plane	42'-2 1/2"
Length Overall	26'-7 1/2"
Gap of Inner Struts	5'-8 1/2"
Gap of Outer Struts	5'-6 1/2"
Chord of Top Plane	5'-8 1/2"
Chord of Lower Plane	5'-3"
Angle of Incidence	3°
Dihedral Angle (Top Plane)	1°
Dihedral Angle (Lower Plane)	2°

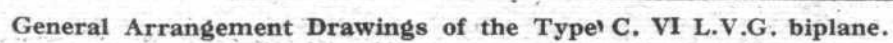
General Arrangement Drawings of the Type C.V L.V.G. biplane.





Four views of the Type C.VI; L.V.G. Biplane.







build the radiator into the upper plane, and such a position is not incompatible with the *cabane* type of centre section strutting. This is particularly true when—as is the case in the L.V.G.—a service petrol tank is supported by the upper plane, and can be made to balance the radiator. It is clear, therefore, that the alteration in design from the *cabane* system to the centre section system has not been made solely to accommodate the radiator.

(To be concluded.)

## CAIRO TO INDIA BY AEROPLANE

THE following announcement was issued by the Press Bureau on December 12th:—

"Major-Gen. W. G. H. Salmond, D.S.O., accompanied by Capt. Ross Smith, A.F.C., has arrived at Karachi in a Handley Page aeroplane to confer with the Government of India regarding the organisation and establishment of the aerial route and service to India. The Handley Page machine employed for this purpose was flown from England to Egypt and took an active part in the final operation against the Turks on the Palestine front.

"The route flown from Cairo was by way of the following stages: Damascus, Baghdad, Bushire, Bandar-Abbas, Charbah, Karachi.

"The whole journey from Cairo to Karachi occupied 36 hours of actual flying time. The total distance of the route followed from Cairo to Karachi is 2,548 miles.

"It should be noted that this flight was undertaken in the ordinary course of aerial duty, and was in no sense made against time or for record breaking purposes.

"General Salmond continued his journey by air to Delhi (about 650 miles further), where he arrived at 3.30 to-day (Thursday).

"The amount of organisation required for this trial trip was, of course, very considerable; and it is a noteworthy tribute to the excellence of the arrangements made that no hitch of any kind occurred. Petrol, oil, and spares depôts were provided at pre-arranged points, and no difficulties arose to mar in any way the success of what must undoubtedly be pronounced a remarkable and historic flight, which is described by those concerned as a splendid augury for the British Eastern Air Service of the future.

"Some confusion having apparently arisen in the public mind in connection with the previous report of General

Salmond's flight from Cairo to Baghdad, it should be pointed out that Major-Gen. W. G. H. Salmond, D.S.O., the General Officer Commanding the Royal Air Force in the Middle East, and not his brother, the General Officer Commanding the Royal Air Force in France, is the officer concerned."

Some further details regarding the first portion of the flight—from Cairo to Baghdad—are contained in a telegram dated Baghdad, December 1st, which has been received from Mr. Scotland Liddell, the representative of the British Force with the Expeditionary Force in Mesopotamia. He says:—

"General W. G. H. Salmond, Commanding the Air Force in the Middle East, arrived at Baghdad this afternoon, having flown from Cairo. The party of five, consisting of General Salmond, General A. E. Borton, commanding the Palestine Brigade, R.A.F., Capt. Ross Smith, Australian Flying Corps, and two air mechanics, left Cairo yesterday morning at 7.40, and arrived at Damascus 5½ hours later. They stayed the night, and left Damascus this morning at 7.40, arriving at Baghdad in 6 hours 50 minutes."

"To-day's distance of 510 miles was a non-stop flight. After flying north-east along the Jebelsh-Sharki range to Palmyra, the machine was steered due east till the Euphrates was reached, and followed the stream to Ramadie, thence across to Baghdad. The flight was made in a Rolls-Royce engined Handley Page machine over a waterless desert. The machine carried 10 days' water and provisions for the party, besides baggage. General Salmond on arrival told me that the weather was perfect and the conditions ideal.

"The importance of the flight lies in the fact that it marks a direct route to India and the Far East. The 'All Red' route must pass Egypt, the junction for India and the whole East. The ordinary time of a journey from Cairo to Baghdad is two to three weeks. General Salmond's flight occupied 12 hours 35 minutes."

### Ipswich to India

ON December 13th at 9.30 a.m. a giant Handley Page of the V 1,500 type, one of those which were originally built to bomb Berlin, left Martlesham, near Ipswich, on a flight to Karachi. She carried six passengers, including General McEwen; the pilots are Major Archibald S. MacLaren, M.C., A.F.C., Capt. Halley, A.F.C., while the other three were sergeant-mechanics. After crossing the Channel, the aeroplane—which has been named H.M.A. "Carthusian"—ran into a bank of fog and had to descend at Le Bourget, near Paris. The stages of the flight are expected to be—

1. Martlesham to Le Bourget, near Paris.
2. Le Bourget to Miramas, near Marseilles, 650 miles from Ipswich.
3. Miramas to Otranto, Southern Italy, 880 miles.
4. Otranto to Cairo, 1,170 miles.
5. Cairo to Baghdad, 875 miles.
6. Baghdad to Bandar-Abbas, Persian Gulf, 870 miles.
7. Bandar-Abbas to Karachi, 692 miles.

If Karachi is reached, an eighth stage of the flight will be made from Karachi to Delhi, making a total of 5,800 miles.

The aeroplane has a span of 127 ft., and weighs with fuel and passengers 27,000 lbs. It has four Rolls-Royce "Eagle" engines, which give it a speed of 80 m.p.h. in calm weather, while the petrol capacity—1,200 gallons—is sufficient for nearly 16 hours' flight. Major MacLaren has twice previously flown a Handley Page bomber to Egypt.

### Flight Across the Andes

THE following announcement was made by the Chilean Minister of War at Santiago de Chile on December 12th:—

"This morning Lieut. Godoy, of the Military School of Aviation, flew from Santiago to Mendoza in the Argentine in an hour and a half, flying over the Cordilleras of the Andes and establishing a height record. The aeroplane used was an English Bristol.

"The Minister of War takes this opportunity of congratulating the British Government upon the excellence of this British aeroplane, and feels that the result of the flight does the greatest honour to the instruction given to Chilean airmen by the British Major Huston."

Another telegram from Santiago says that Lieut. Godoy flew from Espejo to Mendoza, a distance of 247 miles, in 1 hour 28 minutes, maintaining an average height of 20,000 feet.

### Dover's Ordeal

SOME details regarding the enemy attacks on Dover have now been disclosed. The first bomb from a German aeroplane was dropped during the forenoon at the back of St. James's Rectory on the day before Christmas, 1914. The Dover anti-aircraft R.N.V.R., who were disbanded in 1916, were the first in England to illuminate a Zeppelin on August 9th, 1915, when three sailors were injured. The Zeppelin was winged, and came down at Ostend. Dover had 113 warnings; on 29 occasions bombs and shells were dropped in the town itself, and on several other occasions it was only the terrific barrage put up that saved the town.

The first moonlight raid took place on January 22nd, 1916, when one man was killed, and two men, one woman, and three children injured. The record number of bombs dropped in one night was 42, on September 24th, 1917, during a night bombardment. Sixty-one shells were fired, only one falling in the town, the others falling in the surrounding country. On February 16th, 1918, during another bombardment, 22 shells fell in the town; one child killed and three injured, and a man and a woman injured. The total number of bombs dropped on the town was 185, whilst the shells numbered 23; four men, seven women, and three children being killed, and eleven men, 23 women, and 12 children injured. The casualties to the men of the services are not available. The damage done amounted to about £30,000.



# The Royal Aero Club of the United Kingdom

OFFICIAL NOTICES TO MEMBERS

## THE FLYING SERVICES FUND

(Registered under the War Charities Act, 1916)

Administered by the Royal Aero Club

For the benefit of Officers, Non-Commissioned Officers and Men of the ROYAL AIR FORCE who are incapacitated on Active Service, and for the Widows and Dependants of those who are killed.

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### Subscriptions

	£	s.	d.
Total subscriptions received to Dec. 9th, 1918	13,997	7	7
No. 3 Training Group, Royal Air Force, Cambridge .. .. .	127	1	0
Total, December 17th, 1918 .. .. .	14,124	8	7

Offices: THE ROYAL AERO CLUB,  
3, CLIFFORD STREET, LONDON, W. 1.

H. E. PERRIN, Secretary.

## THE ROLLS-ROYCE AERO ENGINES

ALTHOUGH the Germans must have captured literally hundreds of these engines in British aeroplanes of different types, it has not hitherto been permissible to publish any illustrations of the Rolls-Royce aero engines. The consequence has been that we have been reduced to giving particulars of German aero-engines, and interesting though that subject has been, it may to some extent have appeared somewhat like advertising the enemy's engines at the expense of our own. We trust, however, that readers of "FLIGHT" have realised that it has been imperative that we should refrain from publishing anything that might be of value to the enemy, and hence we have perforce had to avoid referring to many subjects that would have been found of surpassing interest. Not the least important of these has been that of aero engines. And in this matter—as in so many others connected with aviation—it may confidently be stated that we at least do not lag behind the enemy now, whatever may have been the position when the War broke out. Even at the present moment it would scarcely be wise to go into details regarding our aircraft equipment, but a few facts and figures relating to the Rolls-Royce aero engines, gathered on a recent visit to the works at Derby, may be of interest. To attempt to convey an adequate idea of the magnitude of the works is quite out of the question. They cover an enormous area, and leave the impression of a good-sized town rather than a factory, each of the individual "shops" being really deserving of the title of "works" for itself. To say that the shops are excellently arranged is superfluous, since had it been otherwise the enormous output attained could never have been reached. We had an opportunity of seeing hundreds of the latest labour-saving machines and devices at work, and quantity production, combined with that quality which has placed the Rolls-Royce production in the very front rank, has been reduced to a fine art at Derby.

As to the engines themselves, they are already more or less familiar to readers of "FLIGHT," either from personal inspection or from such brief particulars as we have been able to reproduce from German sources. Thus a few particulars of the 250 h.p. Rolls-Royce engine were published in our issue of November 1st, 1917.

Anticipating the need for more powerful aero engines, Mr. Royce devoted his attention in the early days of the War to designing a high-power engine. The outcome was the "Eagle," completed in October, 1915. It may be mentioned that this engine was used in the successful long-distance night raids into Germany, and the Handley-Page

biplane which flew from London to Constantinople was also fitted with two Rolls-Royce "Eagle" engines. Originally designed as a 200 h.p. engine, it was developed and improved before its first trial in October, 1915, when it showed a brake test of 255 h.p. Far from being satisfied with this result, the policy of continuous research and experiment was pursued with extraordinary results, as may be seen from the following record of official brake tests, all made without any enlargement or radical alterations in design. Thus the tests made in—

March, 1916, showed 266 h.p. at 1,800 r.p.m.  
July, 1916, showed 284 h.p. at 1,800 r.p.m.  
December, 1916, showed 322 h.p. at 1,800 r.p.m.  
September, 1917, showed 350 h.p. at 1,800 r.p.m.  
February, 1918, showed 360 h.p. at 1,800 r.p.m.

To meet the demand for a smaller engine to be used for training purposes, the "Hawk" was designed in December, 1915. The original intention was to produce an engine of 75 h.p. at 1,350 r.p.m. But as in the case of the "Eagle," the designer was not satisfied, and further study and shop experiments resulted in the following records, again without enlargements or alterations in design:—

In February, 1916, 91 h.p. at 1,350 r.p.m.  
In October, 1918, 94 h.p. at 1,350 r.p.m.  
In October, 1918, 105 h.p. at 1,500 r.p.m.

In April, 1916, the "Falcon" engine was produced, a similar type to the "Eagle" but smaller. The "Falcon" has been fitted, amongst other machines, in the Bristol Fighters with excellent results. The development of the "Falcon" has been no less remarkable than that of its prototypes. These are the official records of tests:—

In April, 1916, 205 h.p. at 1,800 r.p.m.  
In May, 1916, 228 h.p. at 1,800 r.p.m.  
In February, 1917, 247 h.p. at 1,800 r.p.m.  
In April, 1917, 262 h.p. at 1,800 r.p.m.  
In November, 1917, 278 h.p. at 2,000 r.p.m.  
In July, 1918, 285 h.p. at 2,000 r.p.m.

The growing demand for larger engines resulted in the design of the Rolls-Royce "Condor," a monster of 600 h.p. This engine was subjected to its first tests as late as August, 1918, with most satisfactory results. Although it has not yet had time to prove itself to the same extent as have the other types of Rolls-Royce engines, it may be stated that brake tests subsequent to August tell the same story of progressive development.

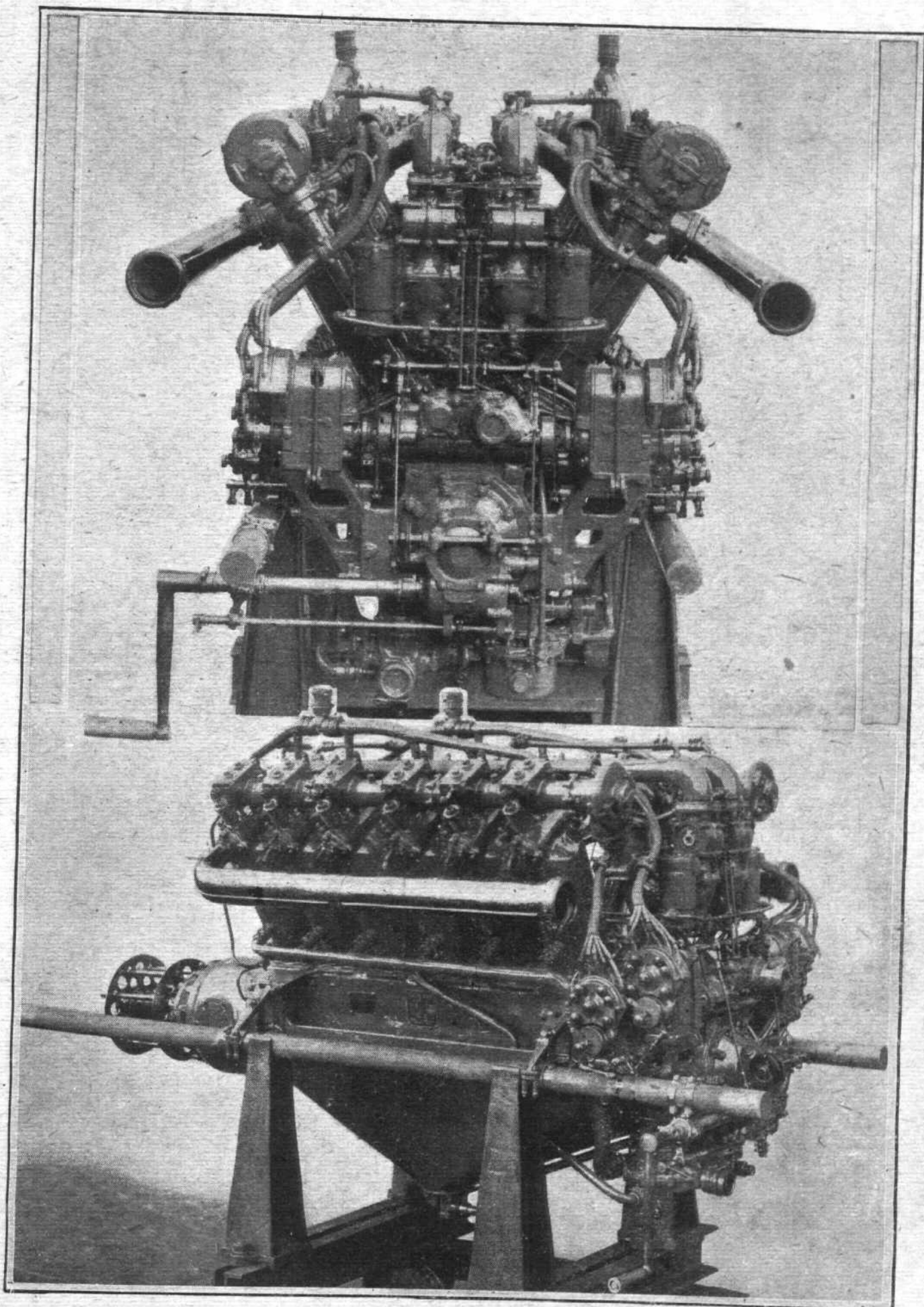
### To Inspect Friedrichshafen?

A BERLIN telegram sent out on December 7th stated that Admiral Browning, head of the British Commission sent to inspect German naval centres, had made fresh demands beyond the stipulations of the Armistice Treaty, including a demand to inspect the aerial forces at Friedrichshafen. It was stated by the British Admiralty and Foreign

Office that they knew nothing of any fresh Armistice terms, and the German report was regarded as some form of German propaganda.

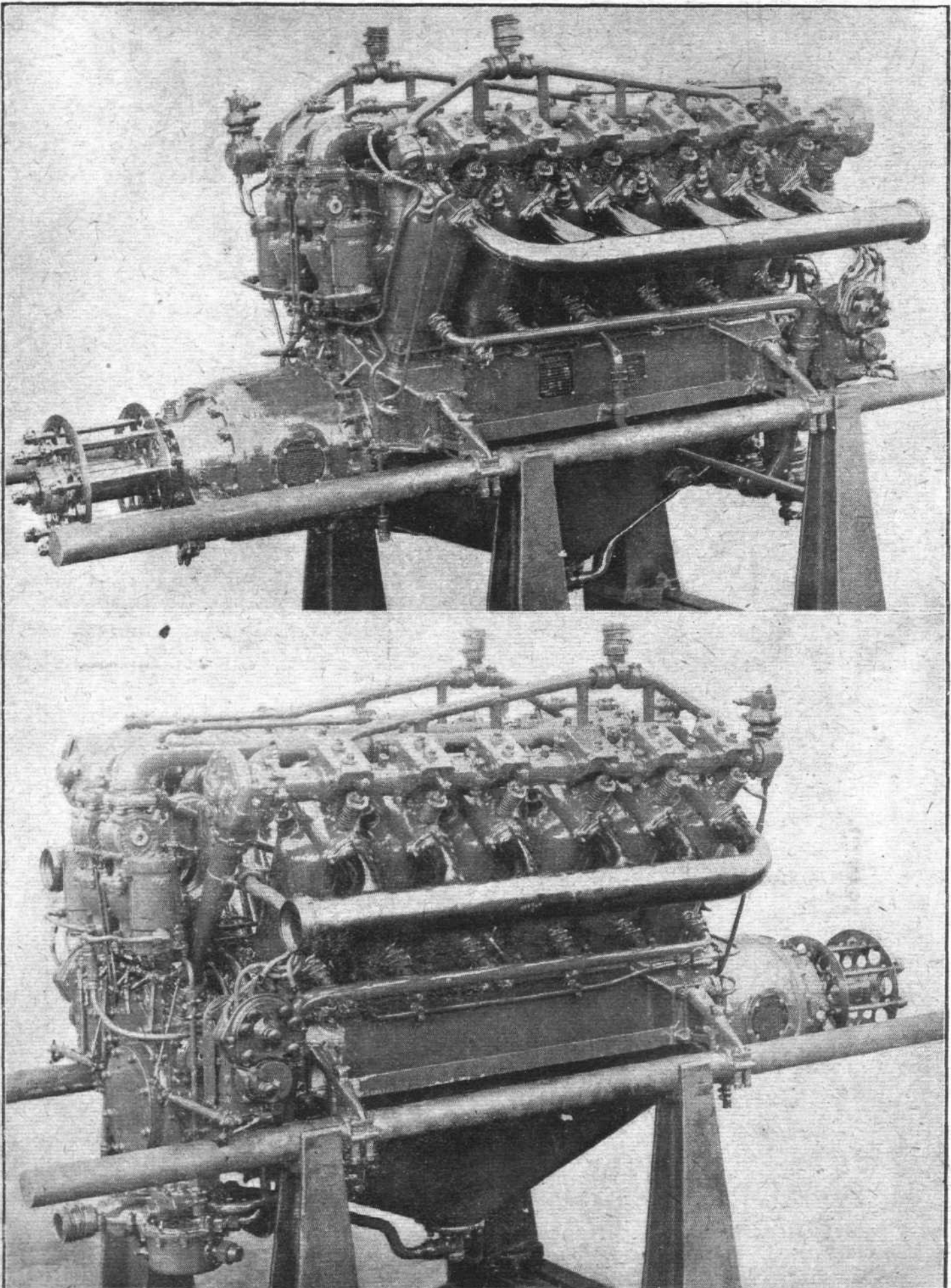
### Italian Air Minister Resigns

SIG. CHIESA, the Italian Commissioner for Air Services, has resigned, the reason assigned being that the need for his Department ceased with the signing of the Armistice.



A FAMOUS AERO ENGINE.—The Rolls-Royce "Eagle." Top: Dead front view. Bottom: Side view, carburettor end.





Two views of the Rolls-Royce "Falcon" aero engine.

# STRESS OPTICAL EXPERIMENTS

By MAJOR A. R. LOW, R.A.F.

(Concluded from page 1410)

## SECTION No. 4.

Fig. 25 gives dimensions of the model.

Fig. 26 shows the deflection curves for the top spar calculated and observed for total loads of 10, 20, and 30 lbs.

Fig. 27 shows the deflections for loads of 35 and 40 lbs. It will be noted that the observed and calculated deflec-

Fig. 28 shows the deflections of the nodes of the top spar. Straight lines are drawn from the origin at the point of support to the first node. Looking at the centre line of the second strut, it will be noted that the second node is above the straight line for loads 10, 20 and 40 lbs., is accurately on the straight line for 35 lbs., and is below it for 40 lbs. Looking at the centre line of the third strut the third node

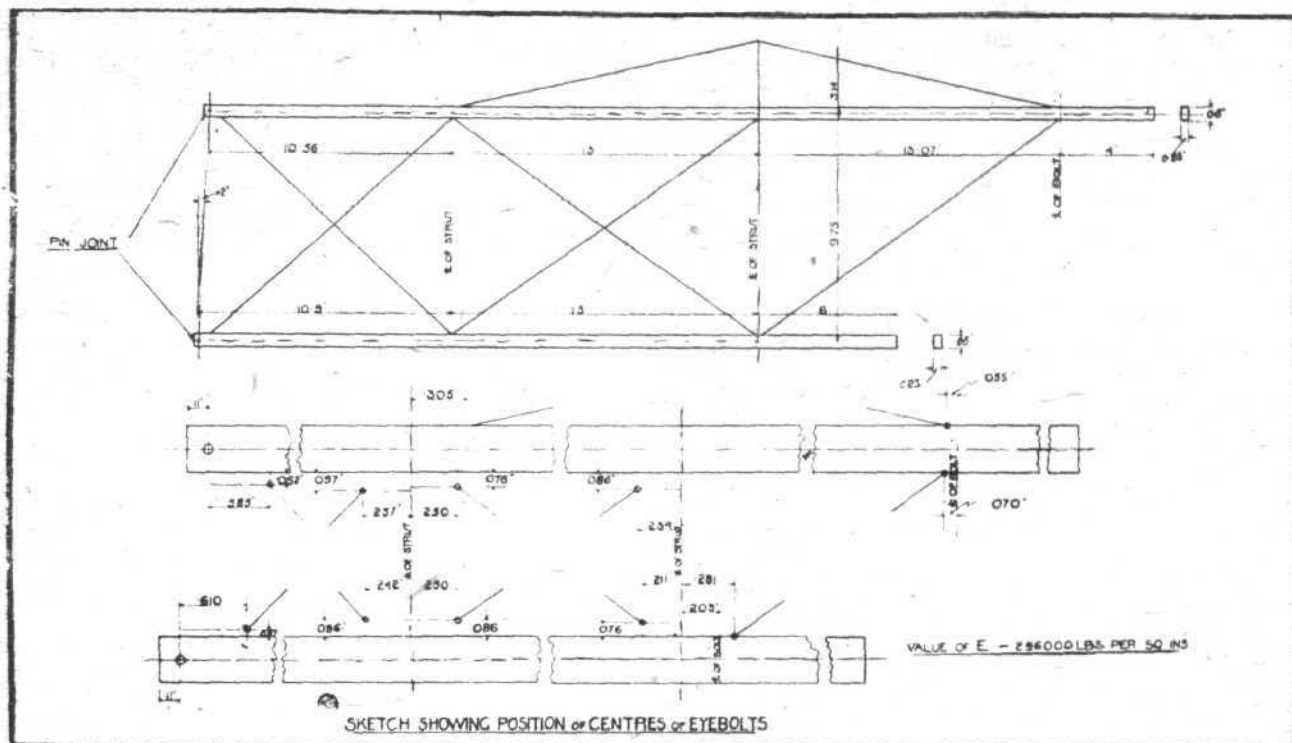


Fig. 25.

tions in the first bay tally fairly closely, but in the second bay a discrepancy appears which becomes more and more marked, up to the load of 35 lbs., where there is complete disagreement between the calculated and observed values when the deflection is considered with relation to the straight line joining the nodes.

The calculated deflections for 40 lbs. total load cannot be shown, as the calculated value reaches infinity for a total load slightly exceeding 36.6 lbs. This makes it clear that the elastic limit has been passed, and that the assumptions no longer represent the actual facts. Of the two curves shown for 40 lbs. load, the smaller represents the instantaneous deflections and the larger shows the deflections after one hour. On removing the load altogether, a certain amount of set remained, but after 24 hours' rest, the set had entirely disappeared. It has been suggested by Maj. Filon that the assumption of a perfectly elastic framework embedded in a plastic mass would account for the phenomena.

is on the straight line very nearly for 10, 20, and 30 lbs., but for 35 lbs. is well below, and for 40 lbs. is still further below the straight line. One of the assumptions on which is based the differential equation of C.I.M. 9 is that the nodes are in a straight line. There is a further tacit assumption that this straight line is horizontal. It is probable that the displacement shown in Fig. 28 rises almost entirely from the shearing distortion of the girder as a whole.

If the nodes lay accurately on a straight line through the origin it is probable that the error in the differential equation would be of a small order, but the appreciable departure from collinearity shown probably affects the accuracy of the results greatly, and may account for the discrepancy between observed and calculated values appearing in Figs. 26 and 27.

Fig. 29 shows in the inner bay of the top spar a comparison between the bending moments obtained from (a) optical observations, (b) calculations by the method of

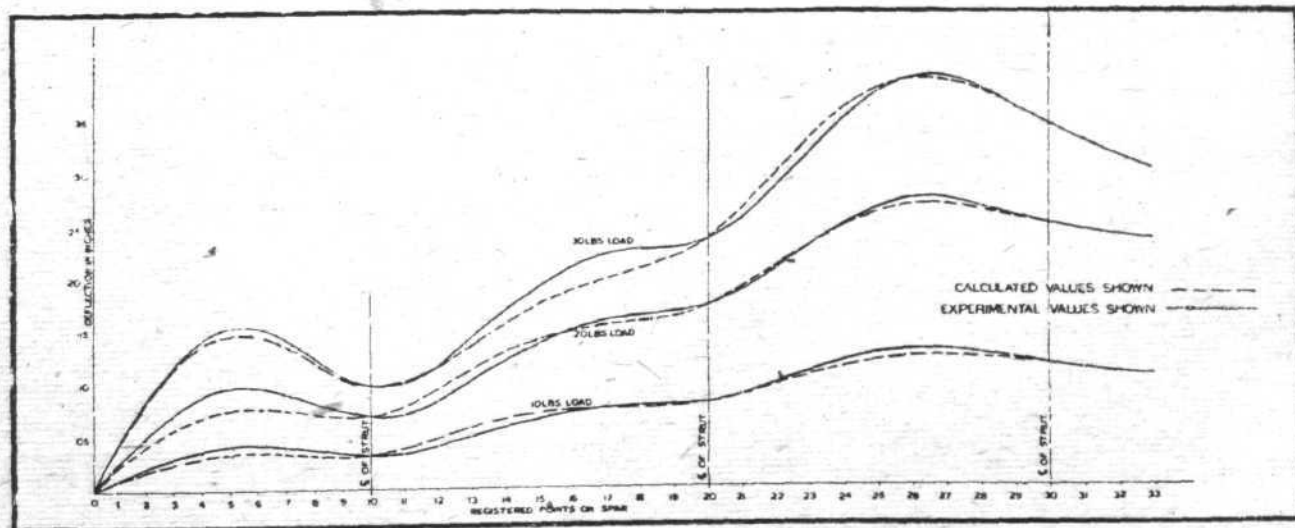


Fig. 26.



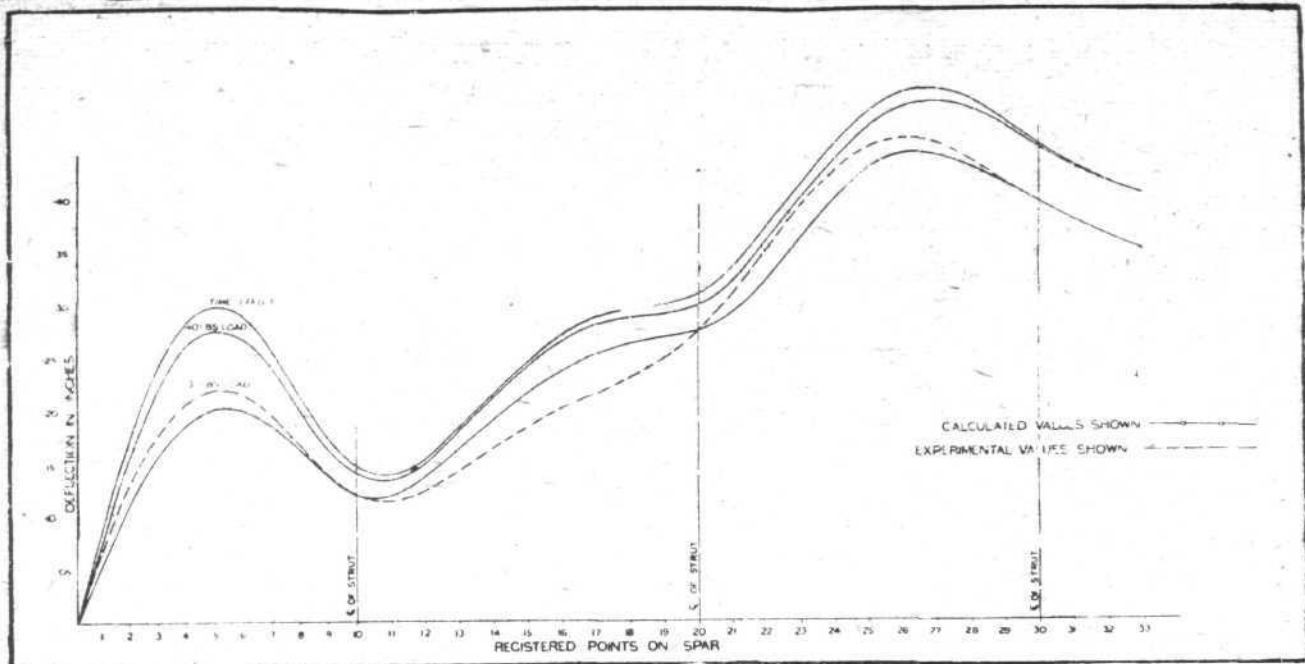


Fig. 27.

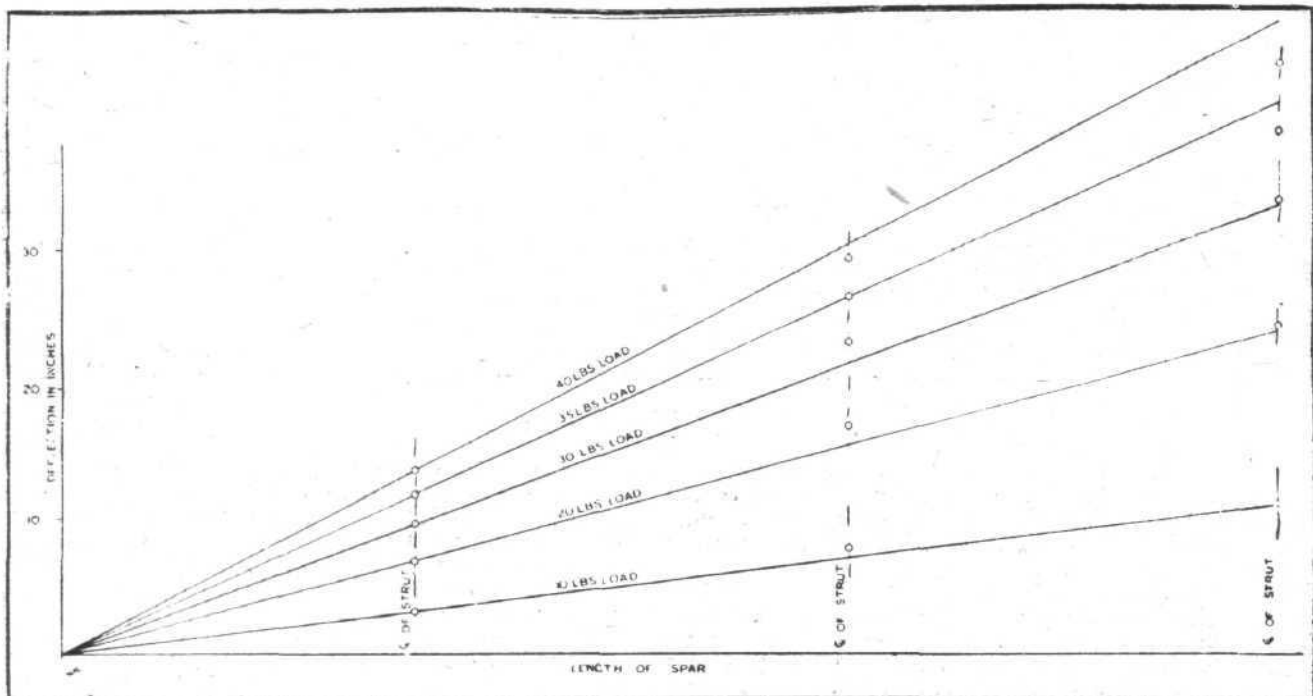


Fig. 28.

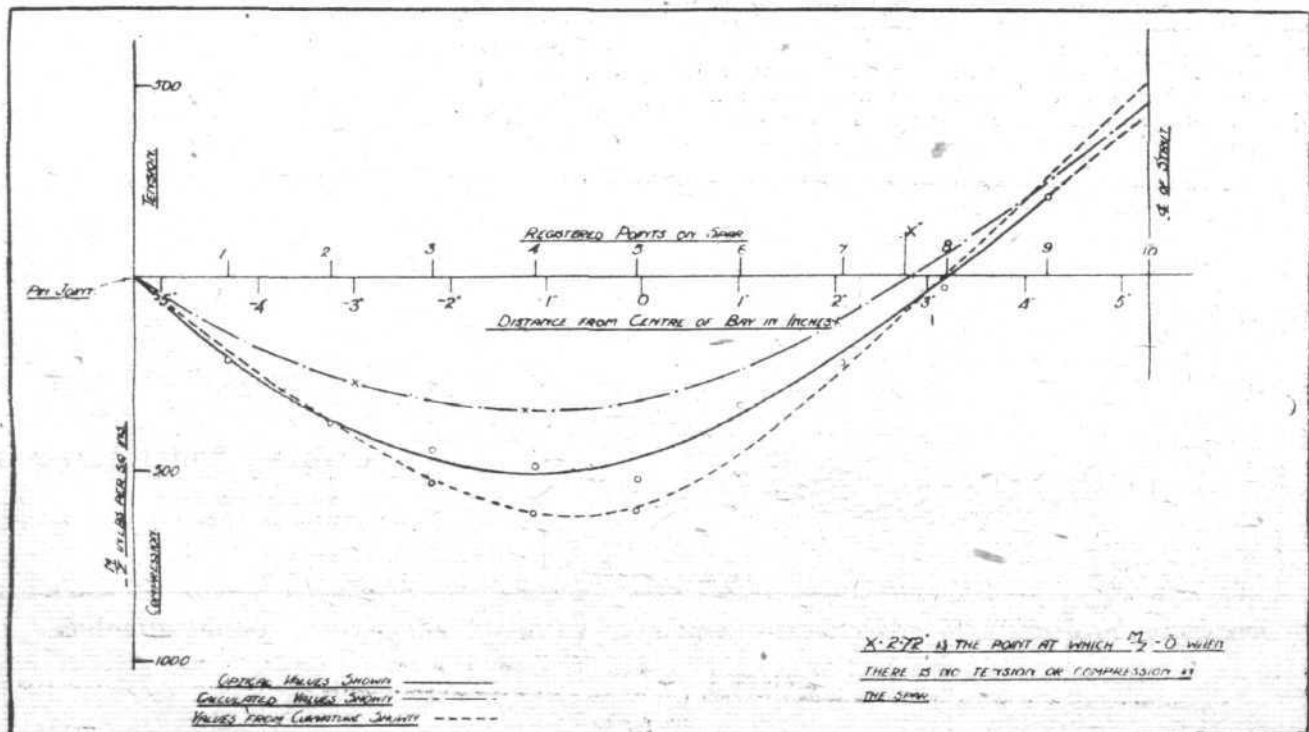


Fig. 29.

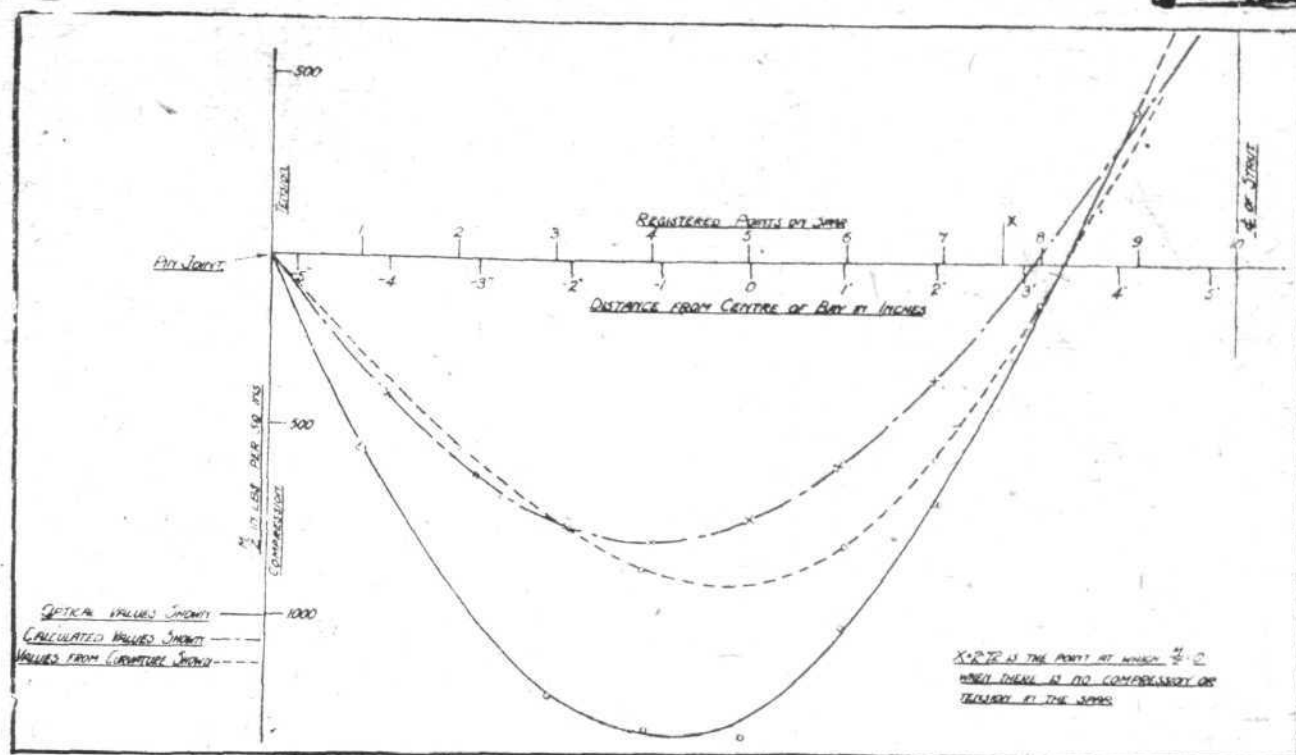


Fig. 30.

C.I.M. 9, and (c) from direct observations of the curvature, by taking second differences of deflections for a total load of 20 lbs.

Fig. 30 shows a similar comparison for a total load of 30 lbs., and Fig. 31 shows a total load of 35 lbs. For the 20 lbs. load it will be noted that the optical curve rises above the calculated curve, and below the observed curve. For the 30 lbs. load the optical curve rises above both the calculated and observed curves, the latter being roughly equal. For the 35 lbs. load the optical curve gives the largest value, the calculated curve the next largest.

The observed curve is rather smaller than the calculated, whereas, in Fig. 29 the observed curve is markedly larger than the calculated curve. Taking the three figures together it will be seen that the agreement between the three methods is distinctly rough, but from independent checks the accuracy of the optical method is probably much higher than the others.

Fig. 32 shows on a much larger scale the variation in the position of the point of inflection given by the last three plates. It can be shown easily that with no end thrust

the calculated position of the point of inflection remain, constant for any loading whatever within the elastic limits to a close approximation.

Plotting distance of the point of inflection from the centre of the bay against the load, a vertical straight line is obtained for no end thrust, and by calculating the position by the generalised equation of three moments a curve is obtained as shown in Fig. 32. This may be compared with the curves obtained by the optical method, and by direct observation of curvature. The discrepancies are too heavy to be accounted for by experimental error, and require further investigation.

#### NOTES BY MAJOR FILON.

#### On the Principle of Dynamical Similarity applied to Deformable Elastic Structures.

##### (1) General Case of Structure of Finite Thickness.

Consider any deformable structure subjected to strain. Let a mechanical model of this structure be made accurately to scale, but of different material. We will investigate the relations which have to be satisfied by the elastic constants

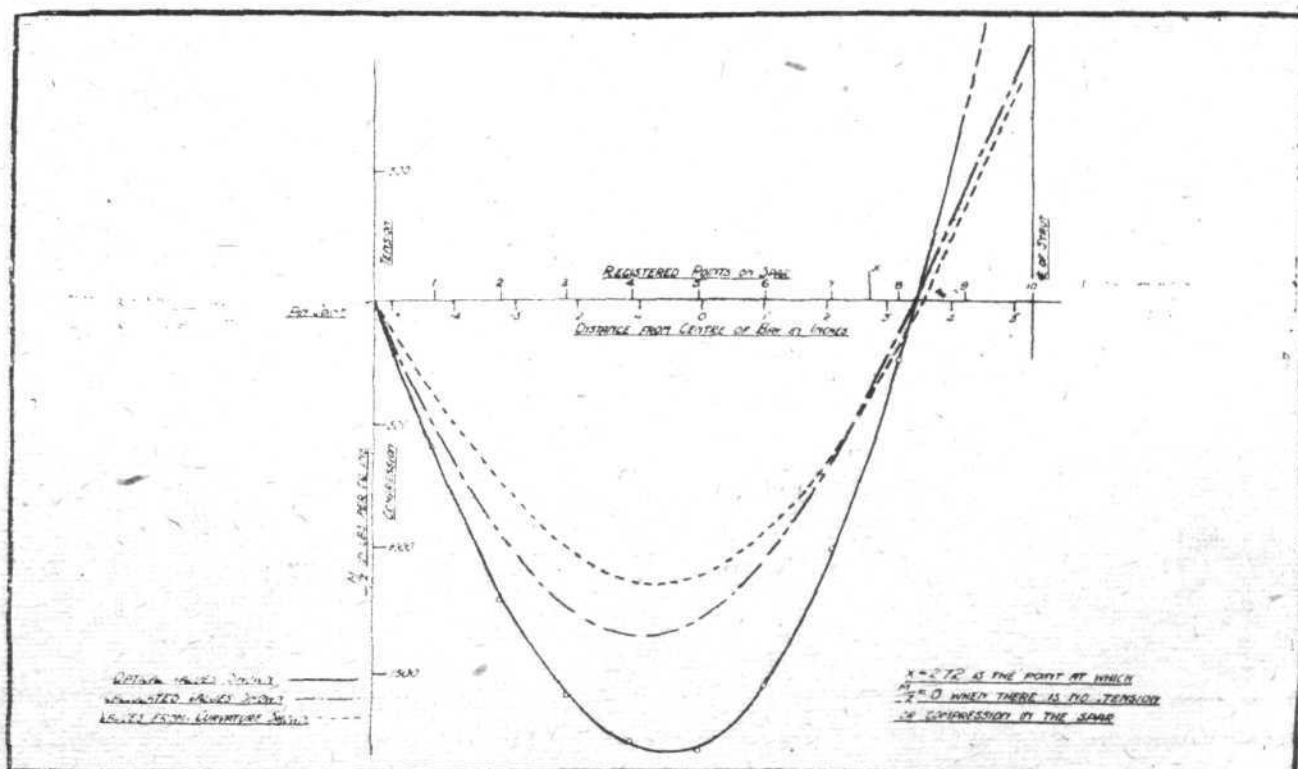


Fig. 31.



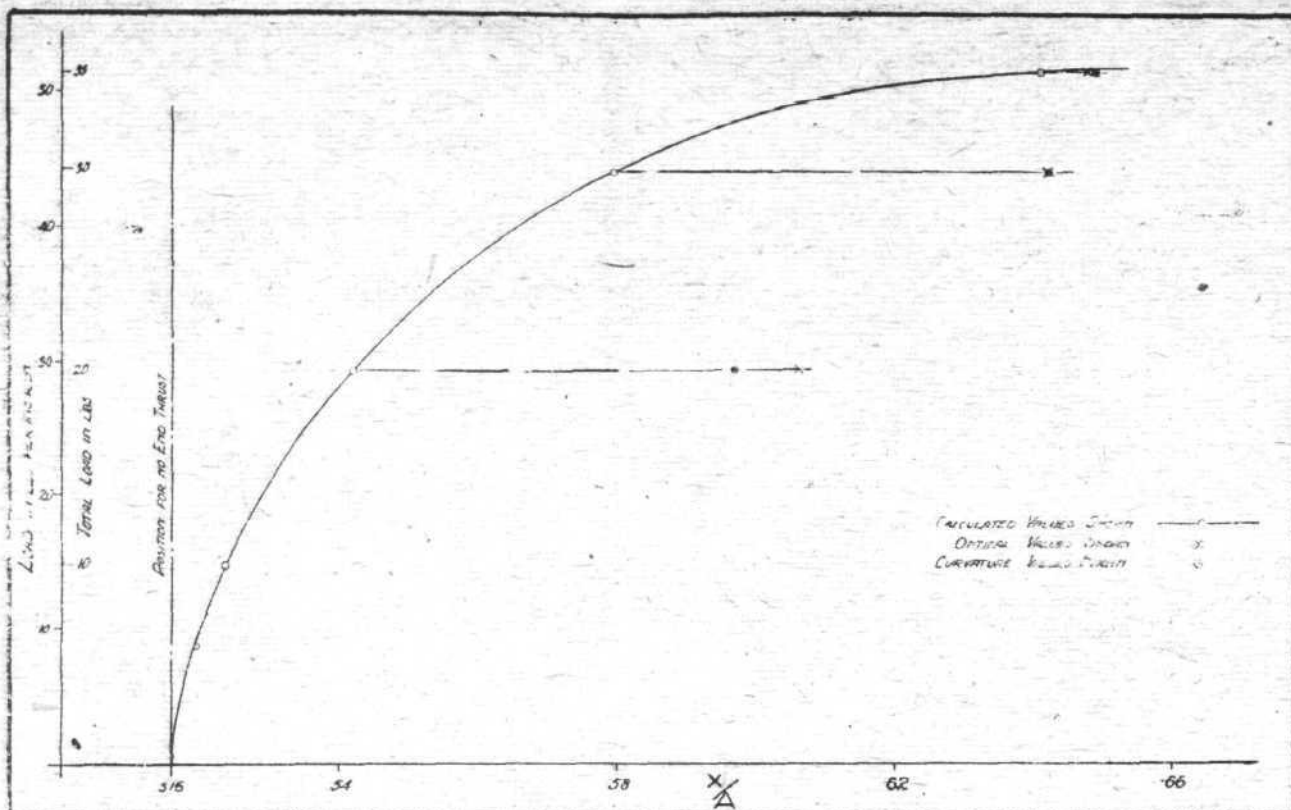


Fig. 32.

and the stresses applied if the deformations of the original system and of the model are to be geometrically similar. Let  $k$  be the ratio of similarity of the model and the original, so that if  $l$  be any length in the original,  $kl$  is the corresponding length in the model.

If  $x, y, z$  are the co-ordinates of any point of the original ( $kx, ky, kz$ ) are the co-ordinates of the corresponding point of the model.

If  $(u, v, w)$  are the displacements at  $(x, y, z)$ ,  $(ku, kv, kw)$  are the displacements at  $(kx, ky, kz)$ .

The strains

$$S_x = \frac{\partial u}{\partial x}, S_y = \frac{\partial v}{\partial y}, S_z = \frac{\partial w}{\partial z}, \\ \sigma_{xy} = \frac{\partial v}{\partial x} + \frac{\partial w}{\partial y}, \sigma_{yz} = \frac{\partial w}{\partial y} + \frac{\partial u}{\partial z}, \sigma_{zx} = \frac{\partial u}{\partial z} + \frac{\partial v}{\partial x}.$$

are identical in the model and original.

The stresses are given by

$$\pi_x = \lambda \left( \frac{\partial u}{\partial x} + \frac{\partial v}{\partial y} + \frac{\partial w}{\partial z} \right) + 2\mu \frac{\partial u}{\partial x}$$

and two similar equations

$$y_x = \mu \left( \frac{\partial v}{\partial x} + \frac{\partial w}{\partial y} \right)$$

and two similar equations being the elastic constants of Lamé.

Thus, in general, for dynamical similarity, all the elastic constants have to be altered in the same ratio  $q$ , and the applied stresses must be altered also in the ratio  $q$ .

#### (2) Framework of Thin Rods.

In the case of *thin* rods forming part of a plane framework under stress in its own plane, we have, if  $T$  be the total tension and  $M$  the bending moment at any point of a rod and  $T^1, M^1$  the corresponding quantities in the model,

$$T = E\Delta s \\ T^1 = E^1\Delta^1 s^1$$

when  $s, s^1$  are the longitudinal strains of the rod in the full size and model respectively.

$E, E^1$  are the Young's moduli,  $\Delta, \Delta^1$  the cross sections of the rods. Now  $s = s^1$  by geometrical similarity.

Hence

$$T : T^1 = E\Delta : E^1\Delta^1 \quad (1)$$

Further

$$M = \frac{EI}{R}$$

where  $I$  is the moment of inertia of the cross section of the rod about the neutral axis and  $R$  is the radius of curvature of the rod.

Similarly

$$M^1 = \frac{E^1 I^1}{R^1}$$

where clearly  $R^1 = kR$  by geometrical similarity. Also let  $p$  be the ratio of forces (not stresses) in the model and full size. Then  $M^1 : M = pk : l$ .

$$\frac{E^1 I^1}{R^1} \frac{R}{EI} = pk : l \\ \frac{R^1 I^1}{EI} = p.k^3 \quad (2)$$

$$\text{But from (1) since } T^1 = \frac{pT}{E^1 \Delta^1} \\ \frac{E^1 \Delta^1}{E\Delta} = p$$

$$\text{From (2) and (3) by division} \\ \frac{I^1 / \Delta^1}{I / \Delta} = k^3 \quad (4)$$

Let  $K$  be the swing radius of the cross section of any rod in the full size and  $k$  in the model.

$$\text{Then } I = K^2 \Delta \\ I^1 = K^{12} \Delta^1$$

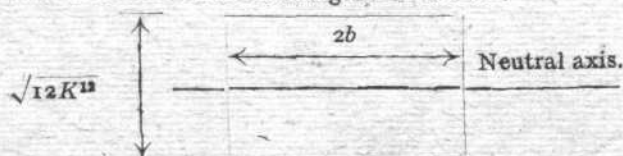
$$(4) \text{ gives } \frac{K^{12}}{K^2} = k^3 \quad \text{or } K^1 = kK \quad (5)$$

That is, although the cross sections need not be geometrically similar (the rods being *thin*) the radii of gyration of the cross sections must be in the ratio of geometrical similarity  $k$ .

This condition being once satisfied equation (3) shows that the moduli  $E\Delta, E^1\Delta^1$ , for the rod as a whole must be in the ratio of dynamical similarity  $p$ , i.e., in the ratio of the applied forces.

Now  $k$  will usually have to be fixed beforehand;  $k$  being known, the radius of gyration  $K$  in the model is fixed.

The materials of the model are also usually not at our choice. Thus  $E^1$  is fixed. But  $\Delta^1$  can be varied within large limits, and this without altering  $k$ . An easy example of this is when the bars of the model are rectangular in section.



The height of the cross section =  $\sqrt{12}K^1$  and is therefore fixed. But the breadth  $2b$  is at our disposal and can be varied so that  $\Delta^1$  satisfies equation (5).

An important particular case occurs when certain rods or ties of the full size are practically unyielding or inextensible,

at any rate in comparison with the others. In this case  $E = \infty$  and  $E^1 = \infty$ .

All that is necessary then is to make the corresponding bars of the model likewise unyielding or inextensible in comparison. Provided this is done, we need only trouble to satisfy the conditions for the "yielding" or soft parts of the model and full size.

If the model and full size are made up of two kinds of material only—a "yielding" and an "unyielding"—it will usually be convenient to satisfy equation (3) by adjusting  $p$ , the ratio of dynamical similarity, that is, by applying suitable loads to the model instead of altering the cross sections to the right ratio.

### (3) Safety Conditions for the Model.

The question of breaking stress on the model is one of fundamental importance. For we have to be careful that the stresses imposed in conserving similarity shall not be so great as to cause the model to collapse.

We have,  $y$  and  $y^1$  being the distances from the neutral axes of the outermost fibres in full size and model respectively, the greatest stresses, as follows:—

$$Es + \frac{E_y}{R} \text{ (full size)}$$

$$E^1s^1 + \frac{E^1y^1}{R} \text{ (model)}$$

(numerically positive values being taken for each quantity).

Now  $s^1 = s$ ,  $R^1 = kR$ ; but  $y^1 = ky$  in general.

As, however,  $K^1 = kK$ , in the case of rectangular bars  $y^1 = ky$  accurately, and it is not unreasonable to suppose that  $y^1$  will generally be of the order  $ky$ . (Note, for similar sections  $y^1 = ky$  also.)

Thus, we may take the case of rectangular bars as fairly typical. We have then  $Y/R = Y^1/R^1$  and greatest stress in model; greatest stress in full size =  $E^1:E$ .

That is, greatest strain in model = greatest strain in full size. Hence, the greatest strain to which the material of the full size is subjected in the case considered must not break down the material of the model.

If the model is made of much more yielding material than the full size, the material of the model will as a rule stand a much greater strain than that which would break material of the full sized member.



### Genoa to Rome by Air

ON the morning of December 15th a squadron of five aeroplanes arrived in Rome from Genoa, after completing the journey in 2 hours 20 mins. They were received, by representatives of the Special Experimental Commission for Air Communications which is showing great activity at present.

### An Italian Mail Air Service

A TRIAL trip in connection with the proposed Italian mail air service was made on December 10th. Two military

Xylonite is a much more yielding material than wood. So that if the full size spar is of wood and the model of xylonite, the conclusions of the last paragraph hold good. Loads on the xylonite model will still usually be well within the safety limit, even when the corresponding loads on the full size wooden member exceed the safety limit—a point of great value in investigating dangerous stresses.

### Bibliography of Research on Stress Optical Effects.

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#### B.—Application to Elastic Theory

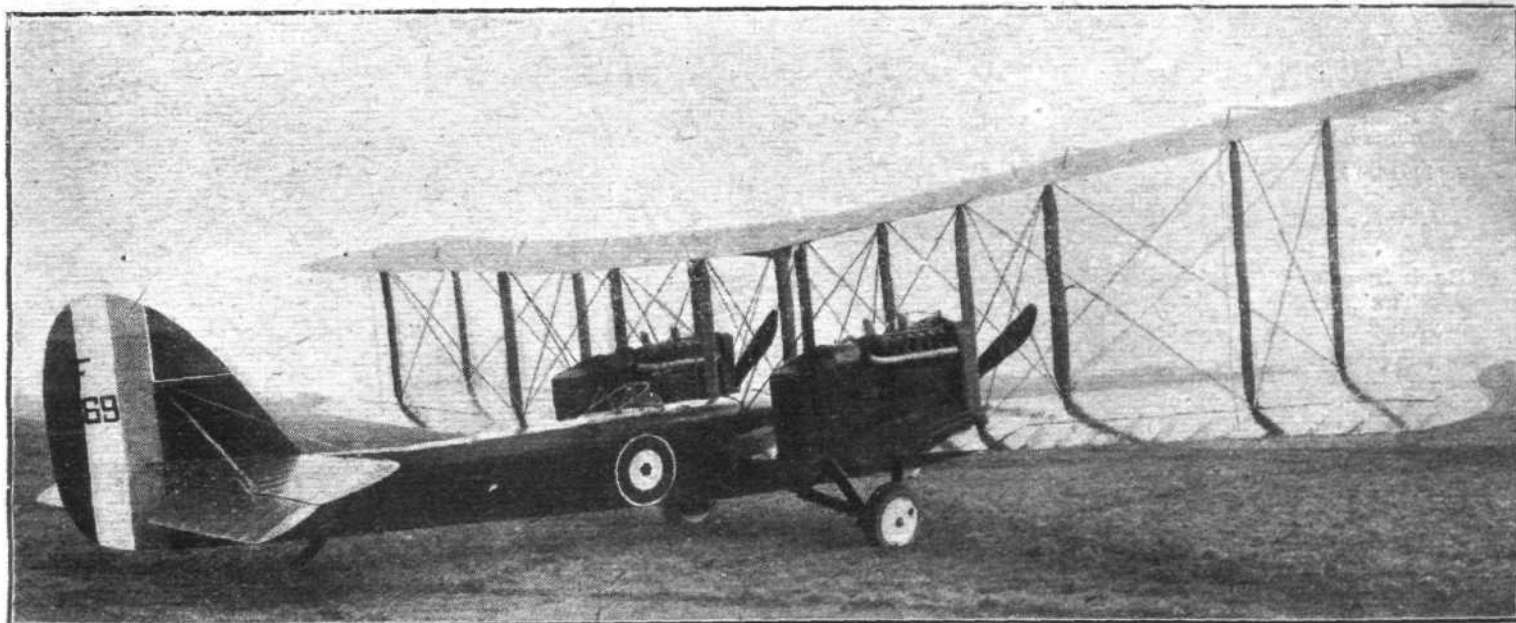
- Clerk Maxwell's paper above cited (4).
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  10. E. G. Coker, Institution of Naval Architects, April 7th, 1911.
  11. L. N. G. Filon, "Phil. Mag.," Ser. 6, Jan., 1912.
  12. E. G. Coker, "Proc. Inst. Mech. Engineers," Feb. 10th, 1913.
  13. E. G. Coker, Royal Inst. of Great Britain, Feb. 18th, 1918.
  14. E. G. Coker, Inst. of Automobile Engineers, Nov., 1917.



aeroplanes, which left Naples at 9.15 a.m. with messages for the Aviation Commissioner at Rome, completed the trip in an hour and ten minutes.

### Flying Meetings in Scandinavia

A SCHEME is now under consideration for the organisation of flying exhibitions in various parts of Scandinavia. It is hoped that a number of foreign aeroplane manufacturers will take the opportunity of demonstrating the progress made by them during the War.



**A FAST TWIN-ENGINE BOMBER.**—One of the Aircraft Manufacturing Co.'s machines designed by Capt. G. de Havilland. This is a de H. 10a, and is fitted with two Liberty engines, each of 400 h.p. The machine has an extraordinarily good performance, its speed at ground level being 134 m.p.h. and at 10,000 ft. 124 m.p.h. The climb to 10,000 ft. takes only 10.3 minutes, while it is capable of reaching an altitude of 22,500 ft. The military load is 1,000 lbs. and the machine has a range of 700 miles.



## THE ROLL OF HONOUR

(When an Officer is seconded from the Army, his unit is shown in brackets)

Published December 10th

**Killed**  
Hickey, Capt. C. R. R., D.F.C. Scarr, Lieut. G. C.  
Huby, Sec. Lieut. O. M.

**Previously Missing, now reported Killed**  
Dixon, Sec. Lieut. H. G.

**Died**  
Jones, Sec. Lieut. H. L. Kednall, Sec. Lieut. G.

**Repatriated**  
Benjamin, Lieut. A. L. Jenner, Lieut. P. C.  
Bing, Sec. Lieut. W. L. Kelly, Sec. Lieut. J. M.  
Bugge, Sec. Lieut. F. H. Kewley, Lieut. B. H.  
Claxton, Lieut. W. G. Lindley, Capt. A.  
Comerford, Sec. Lieut. J. J. Lonsdale, Sec. Lieut. V. O.  
Cooke, Lieut. P. B. MacDonald, Lieut. R. M.  
Coope, Lieut. N. N. Mawer, Sec. Lieut. A. L.  
Courtney, Lieut. W. E. L. Murray, Capt. D. G.  
Crawford, Capt. C. Newstead, Sec. Lieut. C. W.  
Crossley, Sec. Lieut. H. Ogilvy, Lieut. W. P.  
Dickey, Capt. R. F. L. Raymond, Sec. Lieut. L. B.  
Ellam, Lieut. H. J. Rowan, Lieut. A.  
Brith, Sec. Lieut. R. G. Sinclair, Lieut. L. R.  
Fulford, Lieut. E. Smith, Lieut. G. T.  
Gill, Lieut. C. E. G. Spencer, Sec. Lieut. W. A. L.  
Gray, Capt. J. A. Thomson, Capt. C. J.  
Gross, Lieut. C. R. Thomson, Sec. Lieut. D. A.  
Gunn, Lieut. J. C. Thresher, Sec. Lieut. C. E. W.  
Helwig, Lieut. N. W. Tracey, Lieut. H. A.  
Houghton, Lieut. D. L. Tresham, Sec. Lieut. W. H.  
Hoy, Capt. E. C. Tussaud, Lieut. H. C.  
Ibbotson, Lieut. H. Wilson, Sec. Lieut. W. A.  
James, Lieut. L. R.

Published December 11th

**Killed**  
Davison, Lieut. S. Morris, Sec. Lieut. C.  
Jukes, Lieut. S. Pick, Lieut. A. J.

**Died**  
Campbell, Lieut. K. P. (Sask. R.).

**Cadets Killed**  
Bladwell, S. F. Drewitt, O. Millhouse, A. P.  
Chapman, C. Hughes, J. Wheeler, G. R.  
Conlon, J. T.

**Wounded**  
Luther, Sec. Lieut. H. G. Marsden, Sec. Lieut. W.

**Repatriated**  
Austen, Lieut. V. G. Lomax, Sec. Lieut. A. K.  
Bockett-Pugh, Lieut. H. C. E. McCann, Lieut. C. M.  
Browne, Sec. Lieut. H. W. MacPhee, Lieut. G. G.  
Clemens, Lieut. H. S. Mercer, Lieut. G. A.  
Duce, Lieut. W. Meredith, Sec. Lieut. J. J.  
Gilbert, Lieut. C. G. Owen, Lieut. R. J.  
Gillan, Lieut. C. J. Parsons, Lieut. C. St. C.  
Gordon, Sec. Lieut. C. A. Peiler, Lieut. M. F.  
Green, Lieut. E. G. Pickford, Lieut. E. W.  
Harrington, Lieut. H. B. D. Pope, Sec. Lieut. A. D.  
Hollis, Lieut. A. Pruden, Sec. Lieut. W. C.  
Hustwit, Lieut. S. A. Smithers, Sec. Lieut. E. L.  
Lewis, Sec. Lieut. D. G. Towne, Lieut. L. F.  
Lindsay, Sec. Lieut. A. T. W. Westing, Sec. Lieut. F. C.

Published December 12th

**Killed**  
Chapman, Lieut. C. R. Sexton, Sec. Lieut. E. Z.  
Clarke, Sec. Lieut. E. G. Van Der Spuy, Lieut. J. S. V. R.  
O'Brien, Capt. H. D. S., M.C.

**Died of Wounds**  
McKay, Capt. D. R. G.

**Previously Missing, now reported Prisoners**  
James, Capt. R. A. Reid, Lieut. J.  
Heyes, Sec. Lieut. A. C. Swann, Sec. Lieut. T. H.  
Lipsett, Sec. Lieut. R. S. Yerex, Lieut. L.  
Mulhall, Sec. Lieut. H. F.

**Prisoner**  
Coulthard, Lieut. R.

**Repatriated**

Peckham, Lieut. C. W.  
Hesketh-Prichard, Capt. F.  
Ratcliff, Lieut. P.  
Robinson, Lieut. J. A. M.  
Sellers, Lieut. F. M.

Published December 13th

**Previously Missing, now reported Killed**  
Goodman, Lieut. G. A.

**Previously Missing, now reported Died of Wounds**  
Welchman, Capt. P. E., D.F.C., M.C.

**Died**  
Barrett, Lieut. J. H. P. McHay, Sec. Lieut. F. H.  
Collings, Sec. Lieut. L. L. Patton, Lieut. T. K.  
Jackson, Capt. H. H. Shead, Lieut. S. G.

**Previously Missing, now reported Wounded and Prisoners**  
Ingils, Capt. A. G. Shook, Lieut. F. K.

**Previously Missing, now reported Prisoners**  
Bruce, Sec. Lieut. A. P. C. Fair, Sec. Lieut. V. A.  
Davies, Sec. Lieut. D. P. Reynolds, Maj. L. J. S.

**Prisoner**  
Goodfellow, Sec. Lieut. S. J.

**Repatriated**  
Grinnell-Milne, Capt. D. Munro, Sec. Lieut. J.  
Marsh, Lieut. L.

Published December 14th

**Died**  
Ashton, Capt. F. W. Mercier, Sec. Lieut. H. B.  
Beasley, Sec. Lieut. A. D. Sayers, Lieut. P. L.  
Brennan, Sec. Lieut. T. L. Strong, Sec. Lieut. R. A.  
Budds, Lieut. P. H. Tomkinson, Sec. Lieut. H. C.  
Hoyland, Sec. Lieut. L. B. Trelease, Maj. R. A.  
Jenkins, Lieut.-Col. L., D.S.O. Wright, Lieut. W.  
Mawer, Sec. Lieut. J. B.

**Previously Missing, now reported Prisoners**  
Allan, Sec. Lieut. C. M. Lewis, Sec. Lieut. H. G.  
Case, Sec. Lieut. B. S. MacLean, Sec. Lieut. M.  
Coleman, Sec. Lieut. J. P. Prime, Sec. Lieut. H. L.

**Repatriated**  
Burnie, Lieut. A. L. Maxwell, Lieut. G. E.  
Cairn-Duff, Lieut. A. Phelan, Lieut. W. M.  
Castle, Lieut. J. S. Scholefield, Lieut. E. R. C.  
Crabbie, Lieut. W. M. Scott-Brown, Lieut. W. A.  
Crosbie, Capt. D. Slade, Lieut. R. T.  
Farmill, Capt. G. C. Somervell, Lieut. W. E.  
Gladstone, Lieut. C. A. Spratt, Capt. N. C.  
Goodson, Capt. A. R. L. Stubbs, Sec. Lieut. H. B.  
Grantham, Capt. V. M. Talbot, Lieut. F. W.  
Gray, Capt. K. W. Weir, Capt. A. G.  
Hunt, Capt. P. B. G. Wilkin, Sec. Lieut. B. O.  
Knight, Lieut. C. Wilson, Capt. C. B., M.C.

Published December 16th  
**Wounded**

Houston, Lieut. E. R.  
**Previously Missing, now reported Prisoners**  
Kennedy, Sec. Lieut. J. G. Stockwell, Sec. Lieut. L. G.  
Scroggie, Lieut. L. C.

**Repatriated**  
Andrews, Lieut. F. C. Harvey, Lieut. G. S.  
Atkins, Sec. Lieut. G. C. Holleran, Capt. O. C.  
Bennett, Lieut. C. D. Hollingsworth, Lieut. R. L.  
Bevington, Lieut. R. J. Kidder, Lieut. W. S. G.  
Chreiman, Lieut. W. W. Larabee, Lieut. E. P.  
Connolly, Lieut. J. D. McCouchie, Lieut. T. L.  
Dandy, Sec. Lieut. J. M. Morgan, Lieut. R. J.  
Dobeson, Lieut. R. G. Pineau, Lieut. C. F.  
Dunn, Sec. Lieut. M. A. Robertson, Lieut. G. M.  
Edsted, Lieut. F. Slee, Sec. Lieut. F. D.  
Fleming, Lieut. J. A. M. White, Lieut. R. E.  
Garrity, Lieut. W. J. Winkler, Lieut. M. H.  
Gorman, Lieut. G. W.



### Back from Germany

THE following officers, who were prisoners in Germany, have been released:—

Sec. Lieut. S. S. Henry, R.F.C.  
Sec. Lieut. R. Macdonald, R.F.C.  
Lieut. D. D. Richardson, R.F.C.

The following officers, who were prisoners of war in Germany, have been released, and have now arrived in England:—

Capt. A. R. Hudson, Yeo., attd. R.F.C.  
Lieut. H. W. Browne, R.F.C.  
Lieut. H. S. Clemens, R.A.S.C., attd. R.F.C.  
Lieut. C. G. Gilbert, R.F.C.  
Lieut. A. Hollis, Hamps. R., attd. R.F.C.  
Sec. Lieut. A. T. W. Lindsay, R.F.C.  
Sec. Lieut. E. W. Pickford, R.F.C.  
Lieut. A. D. Pope, R.F.C.  
Sec. Lieut. W. C. Pruden, R.F.C.  
Sec. Lieut. F. Westing, R.F.C.  
Lieut. W. Harrison, N.Z.N.R., attd. R.A.F.  
Lieut. H. K. Love, Aus. F.C.

Lieut. C. R. Gross, Man. R., attd. R.A.F.  
Lieut. N. W. Helwig, Cent. Ont. R., attd. R.A.F.  
Lieut. L. R. James, B.C.R., attd. R.A.F.  
Lieut. B. H. Kewley, Man. R., attd. R.A.F.  
Lieut. R. M. Macdonald, Man. R., attd. R.A.F.  
Lieut. R. W. White, Can. M.G.C., attd. R.A.F.

### From Turkey

THE following officers, who were prisoners in Turkey, have been released:—

Capt. T. E. Lander, M.C., High. L.I., attd. R.F.C.

### Two Italian Airships Missing

It was announced in Rome on December 10th that two airships, 05 and 06, had disappeared while flying from the Ciampino aerodrome, near Rome, to Taranto. Both met with adverse weather. The 05 was last seen over San Vito di Puglia flying ground, and some of the crew jumped off. Major Berardi, the navigating officer, and a mechanic, however, remained at their posts on board the airship in the hope of saving it.

## AIRISMS FROM THE FOUR WINDS.

ALTHOUGH the last of the Great Powers to enter the War, probably no nation has learnt more from the general trend of war methods than the United States of America. She has certainly learnt enough, judging by pronouncements, semi-official and otherwise, to appreciate the real meaning of the "Freedom of the Seas," as viewed by Great Britain, and it looks as if the U.S. in the future means to run neck and neck with this country in building and maintaining a super navy to help secure that "Freedom of the Seas," which, by the bye, does strike us once again as emphatically more for the concern of that League of Nations, when it gets going, than any business of the Peace Congress. Surely the latter is to dictate the Allies' terms of Peace to Germany. At least the U.S. realises clearly that aviation is very intimately mixed up with any big fighting Sea Force, and in this direction Admiral Badger, the Chairman of the Executive Committee of the U.S. General Naval Board, has made the following pronouncement:—

"Aircraft will in the future play an important part in all scouting operations of the Fleet.

"The General Board is convinced that Fleet engagements will be preceded in the future by operations in the air. Therefore it is necessary that facilities shall be provided for our Fleet to carry on such operations.

"Admiral Beatty, the Commander-in-Chief of the British Grand Fleet, has informed us that the Germans have six seaplane carriers, and that in Fleet operations they appear to be working seaplanes in conjunction with Zeppelins. He says that every effort should be made to develop the use of naval aircraft for Fleet purposes in every possible respect. The General Board has recommended the inclusion of six seaplane carriers in the 1920 programme.

"The General Board believes that our Navy should possess rigid airships and has recommended the purchase abroad of two of the latest patterns and the construction in this country of two more. It is understood that the British decided before the close of war to keep 16 rigid airships in commission. They have now nine built and four authorised.

"The French have adopted rigid airships as part of their

naval programme. Germany is reported to have had a fleet of 50 rigid dirigibles, with necessary manufacturing facilities to turn out a ship every two or three weeks."

ONE can well believe that the discerning public, after having been severely inoculated with the thousands of wonderful photographs from above of the surface of this sphere of ours, will look for work from the bird's-eye point of view, from the brushes of our leading artists. It should become quite a business to hire out to artists some of our sausage balloons to enable them to correctly record on canvas what the pilot sees when passing through the air, and instead of a series of moored punts at some very favourite artists' bit on the river, it may well become a common object of the landscape to see half a dozen "sausages" bending to the wind in the more picturesque districts of England.

"NIGHT PILOT" in a contemporary not very unreasonably protests against the attempts being made to dub aviation pilots who may join up with the commercial side of aviation, "aerial chauffeurs." A more suitable and more dignified designation should easily be found.

WHAT sounds uncommonly like a practical application of aviation to modern requirements is reported from Australia. An expedition of six experts, with aeroplanes and motor cycles is to leave Sydney on January 14th for a survey of the trans-Australian route to Port Darwin in the Northern Territory, whence it is proposed that there should be connection to the Eastern Archipelago, India, and Egypt.

THOSE disconcerting aerial net aprons which put the fear of God into the Hun bombers of London, were suggested, as an antidote, it appears, in the very earliest days of the Zeppelins. "The Londoner" upon this subject, for fear there may arise some misconception, like unto the disputes as to who first conceived the idea of "Tanks," writes:—

"Let me put in a word for Mr. James Macdonald, of Ilford and Stornoway, chief engineer of a boat which a submarine put down in the Mediterranean. In the very early

Teaching the Young to Fly.—At the Enemy Aircraft Exhibition a good use has been found for a German machine. All the controls have been removed and placed on the floor of the hall in such a way that young England can take his seat and, as shown in our photograph, see on the aeroplane in front of him the elevator, rudder, etc., respond obediently as he gleefully pushes the joy-stick and rudder. Nothing can give greater delight to the very small boy than to be allowed to "take charge" of a full-sized aeroplane, especially a German one.





days of the war, before Zeppelins had ceased from troubling, and before Gothas had even been heard of, he showed me by rough diagrams a plan of nets hanging from balloons to trip up Zeppelins. I believe he showed them also to other persons.

"The matter is clear in my mind, because some of us were inclined to scoff, as in those days it seemed rather fantastic to dream of curtaining the sky. Mr. Macdonald was also an early advocate of nets for catching submarines."

THE idea of Mr. Handley Page for overcoming the difficulties of regular aeroplane services during foggy weather, is indeed excellent. He suggests that air routes should be mapped out by captive balloons tethered with their correct markings at such a height as to be above the mantle of fog which so bothers the flying man. A pilot flying with his passengers and running into a district enveloped in fog would thus be able to tell from these guide balloons exactly where he was and where he would find safe landing.

A good deal is being said about converting the large bombing and other fighting planes into postal and passenger carrying machines, but is it at all certain that for the latter purpose this can so very easily be effected? Air problems of this nature are not quite so readily solved as the conversion of a 4-seater Ford car into a tradesman's van.

THE Aero Club of America has lately inaugurated a club in Paris which will form a centre for those interested in the military and commercial aspects of aviation. A felicitous opening address was given by M. J. L. Dumesnil, Under Secretary of State of Aeronautics, in which he expressed the hope that the happy alliance which already united the two sister Republics would be yet further strengthened by the work of the club. The speaker reminded his auditors that of 240 pilots of the Lafayette Escadrille, 70 had died on the field of honour. Among those who were present may be named Mr. William G. Sharp, the American Ambassador, M. Henry Deutsch de la Meurthe, President of the Aero Club of France, M. Paul Painlevé, Commandant Brocard, Capt. Heurteux, and Lieuts. Renée Fonck and Beaumont, the latter being well and favourably known for their work over the lines.

OUR contemporary *L'Auto* raises the query as to what will become of the "aces" of this war, now that, like Othello, they find their occupation gone? Renée Fonck, who has 75 victories to his credit, has already received several alluring offers from private firms; but as he is an Officer of the Legion of Honour at the age of twenty-four, it is thought likely that he may pursue the career of arms. Lemaitre will direct an aerial transport enterprise; if he does it with the efficiency with which he bombarded the Huns 100 times in the course of one day, his shareholders will be enviable. Ehrlich says that he has a situation already found, he will stay with his parents! Lieut. Bourjade avows flatly that he will enter the clerical profession, in which he stands alone. Many of these adolescent fighting men, one of them having only just reached his twentieth year, say that they want time to make up their minds.

LIEUT. MADONHAS received the Rosette of the Legion of Honour, a well-earned distinction, conferred in recognition of fearless work accomplished over the enemy lines while on reconnaissance work. He has over forty enemy machines to his credit, and to him at least the Armistice has brought no cause for rejoicing, as he had set his heart on attaining the half-century.

## The R.N.A.S. Dover Patrol

SPEAKING at Dover on December 12th, when he was presented with the freedom of the borough, Vice-Admiral Sir Roger Keyes said that from personal observation he could confirm the great damage done by the R.N.A.S. machines attached to the Dover Patrol to the aerodromes near Bruges and Ostend. He said he visited the places two days previously and the damage caused there was indescribable.

## The Enemy Aircraft Exhibition

THE R.A.F. Exhibition of Enemy Aircraft at the Agricultural Hall, Islington, continues to prove a great attraction, and up to the end of last week 100,000 people had visited the show since it was opened on November 15th. The arrangement by which visitors may manipulate the controls of a

AN inter-ministerial commission has already been set up in France to deal with the questions arising in connection with the inauguration of aeroplane services between England and France, also matters of customs inspection, mails, &c. An inter-allied conference will be held shortly to establish the limitations to be observed in connection with such services.

NOT even the incessant bombing of the presumptuous Boche afforded more delight to the *poilu* in the trenches than the gratuitous delivery of the morning papers by aeroplane, an idea comparatively recently instituted, and which was hailed on its advent by "ovations prolonged."

MR. CLIFFORD PRODGER really ought to write a book. The many adventures he meets with in the course of his career as an experimental pilot would make entertaining and profitable reading. Last week he added to his experiences on the South Coast. He was testing a small flying boat late in the afternoon—later than was comfortable, but he was anxious to catch a certain train north if possible. He was alone on the flight, when suddenly he observed water leaking generously from the radiator. Very soon the thermometer began to display unusual activity, and according to Mr. Prodger it went right round the dial at least three times, so evidently the motor was getting warm. As the night was already dark and a thick sea-mist was coming up he knew the position was not exactly comfortable, but nothing would ever disturb his *sang-froid*, so he calmly made for the shore. It was some distance off, for owing to the low clouds and the low tide he had been flying a good way out. Unfortunately he could not get close in, and consequently no one saw him. Having descended safely on a calm sea he stopped, and he looked, and he carefully listened, as George Robey would say, but there was nothing doing anywhere. By this time it was perfectly dark and more foggy than ever. In fact he hadn't the foggiest idea where he was, so he started to shout for assistance. He kept this up until his voice gave out, sitting meanwhile on the outside of his cabin, but nothing happened. At last he decided to climb inside and put on his leather flying suit, which up to that time he had not worn as it was not a very cold evening. He proposed to make himself as comfortable as circumstances would permit inside the boat, but before doing so he searched his pockets and found some State Express cigarettes and a few matches, and these, he says, saved his life. He lit a match (it happened to be one of those good ones we sometimes find in a box) and the flare, reflected on the fog, attracted the attention of two fishermen who chanced to be out late in a rowing-boat. They came along to investigate, and were able to tow him and his flying-boat a mile and a half to his destination. It was a lucky chance. If the Admiralty regulations about off-shore fishing limits had not been relaxed last week there would have been no fishermen out to see him.

## TEN YEARS AGO.

Excerpts from "FLIGHT" of December, 1908.

### MOORE-BRABAZON FLIES.

Congratulations to Mr. Moore-Brabazon on his achievement of flight. Omitting for the moment the claims of Mr. Henry Farman, he is the first domiciled Englishman who has succeeded in this field of enterprise. It was on Thursday last, December 3rd, that the real flight event came off, and on that date he succeeded in accomplishing three distinct flights of from 500 to 600 metres each.

German aeroplane, as illustrated on page 1441, has proved most popular, while the two German engines, sectioned to show every working part, are also a never-ending attraction. The exhibition is open daily from 10 till 10 on week-days, and from 3 till 10 on Sundays, a charge of 1s. being made for admission, which goes to benefit the R.A.F. hospitals.

### A "Juvenile" Lecture

THE annual "Juvenile" lecture of the Royal Aeronautical Society will this session be given by Mr. F. Handley Page, C.B.E., who will take as his subject "To Constantinople and back by Aeroplane in War Time." The meeting will be held in the Central Hall, Westminster, on January 8th, 1919, at 3 p.m., and the chair will be taken by Lieut.-Col. Alan Burgoyne, M.P. Children of members and their friends are specially invited.



# THE REPORT OF THE CIVIL AERIAL TRANSPORT COMMITTEE

In our last issue we printed the final report of the C.A.T. Committee, and this week we continue with the interim report, dated February 7th, 1918, dealing with the International Aspects of Civil Aerial Transport. We also commence the publication of the Appendices.

It is pointed out by the Committee that owing to the fact that much of the information upon which the reports, both of the Committee and its Special Committees were based, was confidential or secret, it has been found impossible to present the reports in their original and complete form. Excisions of passages in the reports or of appendices are indicated by asterisks.

## INTERIM REPORT OF THE C.A.T. COMMITTEE AS TO THE INTERNATIONAL ASPECTS OF CIVIL AERIAL TRANSPORT.

### To the Air Council:—

1. By our terms of reference we were invited *inter alia* to consider the development and regulation of civil aerial transport from an international standpoint. We have been informed by the Foreign Office that in the opinion of that Department, if it is desired to set on foot negotiations for the conclusion of an International Aeronautical Convention, no time should be lost in approaching certain Allied and friendly Governments. We therefore think it desirable to submit an Interim Report on this branch of our subject at once.

2. At the outset of our enquiry we found it necessary to divide the subjects covered by our terms of reference under various heads, and to refer these different heads to special committees for detailed investigation. One of the branches of enquiry so referred comprised international and legal problems, and Special Committee No. 1, who have dealt with these problems, have presented a report which, as far as it concerns international questions, has generally been approved by us. We think it will be found convenient that we should enclose herewith this Report in its entirety, and that we should draw attention to certain salient points which seem to us to call for emphasis or comment. We shall deal in a further report with the latter part of the report of Special Committee No. 1, which is concerned with questions of municipal legislation.

3. It will be observed that the Special Committee, in considering the first part of their subject, have taken as a basis the Draft International Convention drafted by the Conference held at Paris in 1910 (Appendix A to their report). This Conference was unable to complete a draft convention for ratification by the Contracting Powers, mainly owing to a conflict of opinion between the British and German delegations as to the right of each State to the sovereignty (or to the exercise of control and jurisdiction, whichever term be preferred) in the air space over its territories. In our opinion this question of sovereignty is one upon which agreement between the Contracting Powers is vital in the future interests of civil aerial transport.

4. It is a question on which it is possible to hold different opinions: indeed, some divergence of view with regard to it has manifested itself on our Committee. It must, of course, be admitted that a State must assert some rights of sovereignty in the air space over its territories, since otherwise no legal control could be exercised over aircraft in flight at however low an altitude, but it is possible to take the view either (a) that State sovereignty should be asserted *usque ad coelum*, or (b) that State sovereignty should be asserted only up to some prescribed level of altitude, above which the flight of aircraft would still be practicable, and that above that altitude the air should be free to all, just as the high seas outside the limits of territorial waters are free to all.

5. From the purely business point of view of the prospects of civil aerial transport in times of peace, the latter view has much to recommend it. The commercial advantages of air traffic are to be expected mainly from rapid uninterrupted flights over long distances, and these advantages would be clearly best secured if aircraft above a certain altitude were allowed to fly freely in any direction without let or hindrance imposed upon them by the municipal legislation of the States over whose territories they might pass.

6. The argument, however, for the doctrine of State sovereignty in the air space *usque ad coelum* is in the main a military one. Military considerations dictated the opposition of the British delegates to the proposals pressed by the German representatives at the Conference in Paris in 1910, and we understand that the views of the Foreign Office and of the naval and military advisers of the Crown are unchanged. To give to foreign aircraft, as a matter of acknowledged international law, the right to fly at will over the territory of the State would be to give them undesirable opportunities for espionage, and generally to limit "the elementary right of a State to take each and every measure which it considers necessary for self-preservation. In time of war, moreover, the doctrine of the "freedom of the air" above a certain altitude would give rise to most embarrassing questions for neutral States. They would actually be exposed to the risk of having aerial battles fought over their territory without being able to claim that their neutrality had been infringed. The case of the upper air presents no true analogy to the case of the high seas outside the limits of territorial waters.

7. The experience of the present war has merely served to increase the force of these considerations, and we agree with the Special Committee that the doctrine of State sovereignty in the air space *usque ad coelum*, on which this country acted before the war, and on which, along with neutral countries, it still acts, is sound, and should be adopted as the basis alike of international agreement and of municipal legislation.

8. As far as the doctrine of sovereignty may be applicable to territorial waters, we agree with the conclusion of the Special Committee that the air space over such waters must be considered from the same point of view as the air space over the land of the State. We desire, however, to point out that the questions of sovereignty over and of any extension of the limits of territorial waters are primarily the concern of the Admiralty, and that military rather than civil considerations must be regarded as of major importance in this connection.

9. We approve the detailed conclusions of the Special Committee set out in Appendix A to their report. The technical regulations contained in Annex C of the Draft International Convention (see Appendix A) were referred to Special Committee No. 2 of our Committee, and we further approve their detailed recommendations. Recent developments in the science and practice of aeronautics have rendered necessary some amendments of regulations agreed to in 1910, more particularly since such regulations were at that date considered from the aspect of the use of airships rather than of aeroplanes.

11. In paragraph 10 (i) of Part I of their Report the Special Committee have touched upon an important question which was not considered by the Conference held in Paris in 1910. We think that the possibility of damage done by foreign aircraft visiting this country is a matter for careful consideration when it is remembered that, unless an aircraft is itself damaged, the owner of it is in a peculiarly advantageous position as regards escape from the legal consequences of his act. We agree with the Special Committee that, if some system of insurance could be mutually arranged between the Contracting Powers, or at least between His Majesty's Government and the States whose aircraft are most likely to visit this country and over whose territories our own aircraft are most likely to fly, such an arrangement would be of distinct advantage to civil aerial transport.

12. Having regard to paragraph 10 (ii) of the Report of Special Committee No. 1, we hold a strong view that some international agreement which will permit of the utilisation of aerial routes immediately after the war is of urgent importance for the purpose of encouraging civil aerial transport, and that therefore early steps should be taken to enter into the necessary negotiations.

13.

For the Civil Aerial Transport Committee.  
(Signed) JOHN BAIRD, Acting Chairman.  
7th February, 1918.

(Signed) D. O. MALCOLM, Secretary.

The appendix to this interim report is not printed.

## APPENDIX I.

### Report of Special Committee No. 1.

#### Terms of Reference:—

To advise as to policy and necessary legislation, with special reference to—

- (1) The attitude to be adopted by the State with regard to national sovereignty in the air and international questions connected with aerial transport.
- (2) The question of State ownership (if any) of necessary State control and regulations as to Customs, Quarantine, and Aliens.
- (3) Necessary amendments of the common and statute law as to the air space covering private property and as to compulsory purchase of land for aerodromes and landing grounds.
- (4) The principles of liability for damage caused by or to aircraft.

#### PART I.

##### National Sovereignty in the Air and International Questions.

1. In considering this branch of the enquiry referred to them by the Main Committee the Special Committee have found it necessary to view the subject from two aspects. The first of these relates to the general attitude which it is thought that His Majesty's Government should adopt at any future International Conference with regard to aeronautics, and the second to the more detailed terms of any Convention that H.M.G. may see fit to agree to as one of many contracting Powers. The Committee recognise the fact that it would not be within the province of the Main Committee in any sense to prescribe to H.M.G. a complete policy governing their action at any future International Conference. This policy is clearly dependent partly upon factors which do not fall within the terms of reference to the Main Committee, as, for instance, the relative strength of the European Powers at the end of the war and the development of aircraft for attack and defence on land and sea. In presenting their recommendations, the Committee desire it to be understood that these should be regarded only from the point of view of the effect of international policy upon the use of aircraft for civil and commercial purposes.

2. The Committee do not think that, from the point of view of civil and commercial aeronautics it would be of much advantage to include in this report anything in the nature of a study or history of the much-disputed question of sovereignty in the air space. They have had the opportunity of considering various papers in which the right of the State to sovereignty in the air space over its territories, as opposed to the doctrine of the "freedom of the air" is discussed.

4. It seems that throughout the period of the International Conference in Paris in 1910 and up to the outbreak of the war, H.M.G. had always maintained the position that every State should claim full and absolute sovereignty in the air above its territories and territorial waters, and that this claim was disputed by certain of the other negotiating Powers, notably Germany. Since the outbreak of war the principle of State sovereignty over the air has been generally claimed, and, except by Germany, recognised; Holland, Denmark, and Switzerland have consistently regarded the passage of belligerent aircraft over their territory as an unneutral act, and taken active steps to vindicate their rights.

6. It will be observed that the recommendations in the preceding paragraph do not touch upon the vexed question of territorial waters. The Committee have come to the conclusion that the claim of the State as expressed in that paragraph, should apply also in respect of the airspace above territorial waters, but in view of the present uncertainty in the determination of the limits of such waters, the Committee also recommend that the claim in this respect should be made applicable to any waters now or hereafter to be claimed as territorial waters.

7. With regard to the detailed terms of any future International Convention relating to aeronautics, the Committee derived great assistance from a Report of a Sub-Committee of the Committee of Imperial Defence, dated July 17th, 1913. In this Report were reviewed the terms of the Draft Convention prepared in Paris at the International Conference held from May 18th to July 29th, 1910. This Conference was not able to complete a draft convention for ratification by the contracting Powers, owing mainly to a conflict of opinion between the British and German delegates as to the right of each State to the sovereignty of the air over its territories. The contention of the British delegates has already been referred to in paragraph 4 of the present report. The Draft Convention, as it stood when the International Conference finally adjourned, represents the limits within which the conferring Powers were able to agree at the time of adjournment.

8. In the Report of the Sub-Committee of the Committee of Imperial Defence the Draft Convention is set out, and in a parallel column are placed the amendments and modifications suggested by that Sub-Committee. The Committee have thought that the most convenient method of dealing with international problems of civil and commercial aeronautics was to consider the articles of the Draft Convention *seriatim* together with the amendments and modifications proposed by the Sub-Committee of the Committee of Imperial Defence. A translation of the text of the Convention prepared in the Foreign Office by Lord Drogheda, together with the observations of the Sub-Committee of the Committee of Imperial Defence and of this Committee thereon, is set out as Appendix A to the present report. With regard



to the three annexes to the Convention which frame rules respectively as to nationality and registration marks, characteristics of aircraft, and rules relating to aerial navigation, the Committee, in view of the technical details involved and the recent development of aircraft from the scientific point of view, have thought it advisable to refer these to Special Committee No. 2 for investigation and report.

9. At the end of the Draft Convention of 1910 will be found four recommendations which do not form a part of the text of the Draft Convention itself. Of these recommendations, the subject matter of the first two appear to the Committee to relate to matters which fall within the scope of Special Committee No. 2. With regard to No. 3, the Committee have made a recommendation. With regard to No. 4, the Committee understand that the Conference of 1910 contemplated an International Board for Aerial Navigation which should act as a permanent link between the various Governments, and should collect information with a view to the revision of the rules of the road and for questions of international importance, but that the British Delegation did not consider that the time was ripe for a permanent institution of this kind. In present circumstances it is evident that the possibility of establishing such an International Board is considerably more remote than it was in 1910, and the Committee do not feel that they can usefully make any definite recommendation on the subject.

10. Two points have arisen for consideration which do not touch upon the text of the Convention itself:—

(i) It appears to the Committee that questions of damage caused by foreign aircraft visiting this country will have to be borne in mind in connection with any future Convention. For the purpose of ensuring reparation for such damage it might be possible to require all foreign aircraft to insure against risks of damage to third parties as a condition of their registration or licence, as the case may be. The Committee think that this point should be considered by H.M.G., particularly in view of the possibility of some mutual system of national insurance being ultimately arranged.

(ii) As a matter of policy it will be for H.M.G. to decide which are the Powers with whom they would wish to enter into an international agreement of the nature contemplated in the draft convention.

## PART II.

### Government Control and Legislation.

1. The control of aerial navigation after the war in the United Kingdom and the Empire is a matter which will necessitate some legislation. Before the war the control of aerial navigation in the United Kingdom was dealt with by two Acts of Parliament, the Aerial Navigation Act, 1911 (1 and 2 Geo. 5, C.4) and the Aerial Navigation Act, 1913 (2 and 3 Geo. 5, C.22). Under the first of these two Acts power was conferred upon the Home Secretary to prohibit the navigation of aircraft over prescribed areas, and an Order by the Home Secretary under that Act, dated September 22nd, 1913 (S.R. and O., 1913, No. 1090) prohibited the navigation of aeroplanes over so much of the County of London as lay within a circle, the centre of which was Charing Cross and radius of which was 4 miles in length. The Act of 1913 extended the power of the Home Secretary to regulate aircraft, and provided for compulsory landing of aircraft coming from any place outside the United Kingdom. Orders and Regulations made by the Home Secretary dated March 1st, 1913 (S.R. and O., 1913, Nos. 228 and 243) made provision for (a) prohibited areas; (b) portions of the coast line prohibited to aircraft from abroad; (c) landing areas for aircraft from abroad; and (d) conditions imposed on aircraft from abroad. On August 2nd, 1914 (S.R. and O., 1914, No. 1117), an Order was made by the Home Secretary prohibiting navigation of all, except Naval and Military, aircraft over the whole area of the United Kingdom. These Acts, Orders, and Regulations represent the only legislative enactments made before the war. Some similar legislation had been passed in other portions of the British Empire.

2. In anticipation of the early development of aeronautics, the Home Office, in 1911, prepared an Aerial Navigation Bill,\* which represents what in that year would have been the basis of a complete code of law controlling aerial navigation. This Bill, a print of which is appended to this report as Appendix B, has been of the greatest assistance to the Special Committee in this branch of their enquiry, and though later aeronautical developments render modification of some of its provisions necessary, the Special Committee approve of the general lines on which the Bill is drawn.

3. It has appeared to the Committee convenient to deal in the body of this report with the general principles on which Government control and legislation should be based, and to relegate to a third Appendix (Appendix C) their recommendations as to matters of detail and their suggestions as to such drafting modifications of the Bill as they think may be of assistance to the Parliamentary draftsman.

4. In the Preamble to the Bill will be found an assertion of sovereignty and rightful jurisdiction of the Crown over the air superincumbent on all parts of His Majesty's Dominions and the territorial waters adjacent thereto. With regard to this assertion, the Special Committee would refer to Part I of their report, paragraphs 2-6 inclusive, in which the international aspects of the assertion are dealt with.

5. It will be observed that the Bill contemplates the following Government Departments as taking part in control and regulation:—The Home Office, the Board of Trade, Customs, and Post Office. Of these two last named are only concerned with particular provisions relating to Customs and mails. The Bill proposes that the Home Office should act in imposing and enforcing general regulations, while to the Board of Trade are assigned duties as to registration, certificates of different kinds, and regulations regarding collisions, salvage, and matters *ejusdem generis*. In so far as the powers of the Board of Trade are concerned the Bill is drawn largely upon the analogy of the Merchant Shipping Acts. The creation of a new Air Ministry will afford a convenient opportunity for conferring on that Ministry the powers of the Home Office and Board of Trade to regulate aerial navigation. The advantages of assigning to a single Department of State the regulation of all matters relating to civil aerial transport are manifest, and the relevant clauses of the Bill will require amendment accordingly.

6. The Committee propose next to deal with the questions of principle arising on the different clauses of the Bill.

Clause 1.—In connection with sub-section (1) (b) of this clause and any regulations which may be made thereunder, attention is called to the Committee's recommendations in Part I of this report relating to Article 19 of the Draft International Convention, and particularly to the additional rule which the Committee suggest should be inserted in that Article. It appears to the Committee that some caution should be observed in the prescription of areas for the landing of foreign aircraft, so that, while every reasonable encouragement should be given to the visits of foreign aircraft, reciprocal facilities should be secured for our own aircraft landing abroad. It has to be borne in mind that as the geographical area of the British Isles is comparatively small, it is to the advantage of this country, from the purely commercial point of view to secure free access for her aircraft to foreign territory. From this point of view, therefore, a liberal policy in the matter of international aerial navigation for civil purposes is indicated. Certain verbal amendments to this clause are suggested in Appendix C.

\* This Bill was in a preliminary stage of preparation, and had not been adopted by the Home Office or the Government.

Clause 2.—The Committee appreciate the fact that the broad questions of nationality and naturalisation are being dealt with independently of aerial navigation. As a matter of principle arising on (d) they think that in the case of companies the true criterion should be that the effective control of the company for all purposes should be vested in British subjects. They refer to their recommendation on Article 3 of the Draft Convention as equally applicable to the sub-section in question.

With regard to the ownership of aircraft by subjects of British Protectorates, the Committee adopt the suggestion of the legal advisers of the Colonial Office that a clause should be added to the Bill empowering His Majesty, by Order in Council, under the Foreign Jurisdiction Act to apply the provisions of the Bill, with any necessary adaptations, to Protectorates and Protected States. The India Office should be consulted as to whether the proposed new clause would be applicable to India as it stands or whether it would require modification to apply it to the Native States.

Clause 3.—The Committee think that, following the precedent of the Merchant Shipping Act, 1894, the Bill should expressly provide for local registration in the various British Possessions.

Clause 4.—The Committee feel that the question of certificates of airworthiness is one which requires close attention. Regulations as to certificates of navigability and reciprocal recognition by the contracting Powers of such certificates were contemplated in the Draft Convention of 1910. It appears to the Committee that for the purpose of ensuring safety for the ordinary population it is better to provide for the competency of pilots by stringent regulations rather than to run the risk of hampering the development of civil aeronautics by imposing on all aircraft onerous conditions as to tests and examination, which might possibly be imposed within the terms of the clause. At the same time the Committee think it reasonable to require that passenger machines plying for hire must be of types the airworthiness of which has been officially certified. The Committee therefore recommend that the provisions of Clause 4 should only be made applicable to types of passenger machines plying for hire, and that this should be made clear in the clause itself, and not left to exemption under the regulations. Even in the case of types of aircraft requiring certificates of airworthiness the Committee feel that the regulations should be so drawn as not to hinder the development of design in the early days of civil aerial transport. The Committee think that these conclusions should be born in mind in the settlement of any future convention.

Clause 5.—The committee approve this clause.

Clause 6.—The Committee, while recognising the necessity for collision regulations, are not in a position to make recommendations as to the details of such regulations, which fall within the province of Special Committee No. 2. In so far as the clause proposes alternative sub-sections, the Committee approve the second alternative sub-section (3). As to the alternative sub-sections numbered (4), the Committee are of opinion that it is advisable to retain the principles governing both the alternatives. As to sub-section (5), subject to a drafting amendment noted in Appendix C, the Committee approve this provision, omitting therefrom the power of seizure and detention as being unnecessary. They consider that infringements of the regulations are sufficiently dealt with under the other parts of the clause.

Clause 7.—The Committee approve this clause, subject to some drafting amendments suggested in Appendix C.

Clause 8.—The Committee approve this Clause, but they express the view that private aircraft flying in their own country and not for hire should be expressly exempted from the obligation of carrying logs.

Clause 9.—Subject to the details of these regulations being considered by Special Committee No. 2, the Committee approve this clause.

Clause 10.—The Committee approve this clause, subject to the exceptions already suggested by them in their recommendation to Article 33 of the Draft Convention (see Appendix A).

Clause 11.—The Committee recommend the substitution of an alternative clause proposed by the Secretary to the Post Office, which is set out in Appendix C.

Clause 12.—This clause is very important to private landowners. It proposes to deprive the landowner of his frequently asserted right to the air space over his land *usque ad caelum*. To retain this doctrine in its entirety would be fatal to civil aeronautics. On the other hand, to allow unrestricted flying over private property at all altitudes would interfere with the reasonable rights of landowners. The interference would take the form either of trespass or of nuisance. The Committee think that the following recommendations would, on the one hand, give reasonable protection or compensation to landowners, and, on the other, impose on aviators no obligation which could not be covered by insurance at reasonable rates, and so avoid hampering the development of civil aeronautics.

The Committee therefore recommend that the Bill should provide as follows:—

(a) No action for trespass should lie except for material damage to person or property, whether caused by flight ascent or landing or the fall of objects from aircraft.

(b) That this right of action for trespass should include one for injury caused by the assembly of persons on the landing or ascent of aircraft elsewhere than at authorised aerodromes or landing-places.

(c) That the obligation on the aviator in an action for trespass should be absolute, negligence not being a necessary element in his liability and "unavoidable accident" no defence.

(d) That an action for nuisance should lie for damages only, and then only if breach of flying regulations is proved as well as actual nuisance.

(e) That special flying regulations should be made in connection with the ascent and landing from or at authorised aerodromes and landing-places, and for the area around the aerodrome or landing-place over which aircraft must necessarily be at low altitudes. Nuisance and injury to the value of property caused by the existence of aerodromes and landing-places are met by para. 10 of this Report.

(f) That the power of seizure and detention proposed in Clause 12 should be limited to what is necessary to establish the identity of the aviator and his aircraft.

Reasonable apprehensions may be entertained of nuisance being caused by the frequent flight of aircraft at low altitudes along regular routes, but the Committee are not at present in a position to make any recommendation as to limitations of altitude being prescribed by regulation.

Clause 13.—The Committee think that it is inadvisable to name in the clause a fixed percentage for salvage reward, but that the amount to be paid should be left to the discretion of the appropriate tribunal.

Clause 14.—The Committee approve this clause.

Clause 15.—The Committee understand that this clause contemplates regulations which will minimise damage to aircraft while under detention. As to the nature of such regulations the Committee have obtained advice from Special Committee No. 2. It appears that the main causes of damage to aircraft under such conditions will be—(i) weather, (ii) interference by spectators. Without making suggestions in detail, the Committee think that the regulations should provide that the person detaining the aircraft should agree to any reasonable proposal put forward by the pilot for the avoidance of damage, e.g., mooring the machine head to wind, with the assistance of earth-screws or stakes, if such are available, and arranging for a guard or other suitable means of preventing damage by spectators. It



seems that the mooring of the aeroplane is more important than its protection from the rain, in cases where the aircraft is only to be detained for some hours.

Clause 16.—Subject to a note in Appendix C the Committee approve this clause.

Clauses 17 and 18.—Subject to a drafting amendment in Clause 18, the Committee approve these clauses.

Clause 19.—The Committee think that the language of Section 2 of the Aerial Navigation Act, 1913 (which closely corresponds with this clause), should be substituted. Recent experience has shown the danger of foreign aircraft flying over prohibited areas of strategic importance. The Committee think that the regulations contemplated, and, indeed, the clause itself, should be made more drastic, and that anyone flying over an area prohibited for naval or military reasons should be liable to be fired at by a commissioned officer in charge of an anti-aircraft gun, in his discretion, even without a preliminary signal, in a case of urgency.

Clause 20.—The Committee think that this clause contains useful provisions which might well be extended to all British Possessions, subject to the right of the legislature of any such Possessions to alter them.

Clauses 21 and 22.—The Committee approve these clauses.

Clause 23.—The Committee think that Clause 23 would be clearer if re-cast, and that it should provide that the Act and regulations should apply, *mutatis mutandis*, throughout all British Possessions, unless and until the legislature of any British Possession otherwise provides, subject to the exception that local legislatures should not be empowered to modify provisions of an international character—that is to say, those relating to registration, collisions, aircraft papers and signals of distress.

Clause 24.—It appears to the Committee that certain provisions in the Bill, at least those contained in Clause 12, should apply to aircraft belonging to His Majesty. They, therefore, recommend that this clause should be so drafted as to make the Bill applicable to aircraft belonging to His Majesty, except in so far as any part thereof, other than Clause 12, may be excluded by Order in Council.

7. It will be observed that the Bill contains no provisions dealing with aerodromes or landing-places. The Committee have considered the question whether all aerodromes (including Flying Schools) and landing-places should be State-owned. They have come to the conclusion that this is not desirable, but that, while private persons and companies should be allowed to establish and own aerodromes and landing-places, these should be subject to Government licence, inspection and regulation in some form. It seems to the Committee that reasonable regulations will go a long way towards preventing injury and annoyance to the public, and will at the same time protect aircraft owners from frivolous claims and proceedings. As experience accumulates the regulations will, no doubt, require modification and different regulations will be appropriate according as the aerodromes and landing-places are in populous or sparsely populated districts. In licensing aerodromes the State will, no doubt, have regard to strategic considerations, and provision should be made that when war is imminent any privately-owned aerodromes that may have been allowed to be established, with their equipment, should at once be available for military use.

The Committee have already touched upon the necessity of some flying regulations applicable particularly to aerodromes. With regard to this and any other regulations for preventing injury and annoyance to the public, they do not offer detailed suggestions, but they think that Section 126 of the Factory and Workshop Act, 1901 (Special Orders), furnishes a satisfactory precedent for the scope of the powers to make regulations to be conferred on the appropriate Government Department.

8. The consideration of aerodromes and landing-places involves the question of the compulsory acquisition of land for their establishment. The Committee are of opinion that the Government should be given similar rights of compulsorily acquiring land for aerodromes and landing-places as it has for acquiring land for military works. Private persons wishing to obtain powers for the compulsory acquisition of land for the establishment of aerodromes must proceed by way of private Act of Parliament or Provisional Order. Such powers would, presumably, have to include powers to cut down trees, remove wire, or perform other similar acts on adjoining land not acquired.

9. It is scarcely within the province of the Committee to recommend alterations in procedure relating to the compulsory acquisition of land. At the same time they think that it would be of great assistance to the development of aeronautics generally if the determination of the amount of compensation payable to the landowner could be made the subject of a more simple and less expensive procedure than that at present employed in private Bill legislation. The Light Railways Act of 1896 affords a useful precedent for the avoidance of some of the difficulties. With regard to the amount of compensation payable to the landowners the principles of the Land Clauses Acts have been construed to the landowner's advantage through the establishment by recent judicial decisions of the doctrine known as "special adaptability," whereby the landowner can, in fact, obtain a sum representing a value greater than the ordinary market value of his land where he can show that the land is specially adapted for the purpose for which it is being compulsorily taken. This judicial doctrine has in some instances increased the amount payable to landowners, and it is one which the landowner might pray in aid successfully in the case of the compulsory acquisition of land for an aerodrome. The Committee think that the application of this doctrine should be specifically excluded.

10. The Committee have also considered the subsidiary question of claims for compensation by persons, the value of whose property has been impaired by reason of the establishment of an aerodrome in the vicinity. They think that claims for such compensation should be entertained at any time within five years from the date of the establishment of the aerodrome, and that such compensation should be payable from State funds in the case

of an aerodrome established by the Government and by the proprietor in the case of a privately-owned aerodrome.

11. The Committee think that the matters referred to in paras. 7 to 10 inclusive above should be the subject of legislation, and that as they are all matters affecting the development and regulation of aeronautics from the general point of view, they can well be dealt with by the addition of further clauses to the Aerial Navigation Bill under consideration.

In conclusion, the Special Committee wish to record their warm appreciation of the assistance rendered by the Secretaries, upon whom has fallen much work, which has been so ably carried out as greatly to facilitate their proceedings.

Sydenham (Chairman), Butler Aspinall, J. H. Balfour Browne, M. D. Chalmers, Drogheda, W. Barnard Faraday, Wing-Capt. R. M. Groves, L. N. Guillemard, G. Holt Thomas,\* W. Joynson-Hicks,\* Major-Gen. J. Whiteside McCay,\* G. E. P. Murray, Col. J. W. Pringle, Capt. E. Elvey Robb, Wing Comdr. W. Sempill, W. P. Schreiner,\* Lieut.-Col. E. R. Wayland.

D. O. MALCOLM, Secretary. January 2nd, 1918.

Those members whose names are marked with an asterisk append the following reservations to the Report: We concur in the Report with the reservation that in our opinion State-ownership of aerodromes and landing-places is necessary in the interests of national defence, and highly desirable also for commercial purposes.

(Signed) J. WHITESIDE MCCAY, W. P. SCHREINER.

I desire to add a few words by way of reservation to Clause 6 of Part II of this Report, so far as it affects Clause 12 of the Home Office Bill. Our recommendations seem to leave it open to an aviator to fly over private property at any height he likes unless actual material damage is proved, and even if a nuisance is created the aviator is still free if he keeps within certain regulations, the terms of which we have not considered. In my view, though the whole doctrine of the right of the landowner to property in the air to an indefinite height must be curtailed, still I am clearly of the opinion that the public will demand, and rightly, a limit above which (except under stress of weather) aviators must fly above private property, and that any persistent flying under this height should be preventable by injunction. The actual height should, I think, be the subject of consultation with the other sub-committees, but probably somewhere between 2,000 to 3,000 ft. would be fair.

I concur in the Report with the following reservations, which are only made with the object of avoiding restrictions which may hamper development of a new mode of transport, of which very little is known at the present time, whereas, as experience accumulates, it will be easy to make such regulations as may be necessary:—

Part I, para. 1.—Whilst it is necessary to confer upon the Home Secretary or other authority the right to prohibit the navigation of aircraft over prescribed areas, I should favour the expression of an opinion from this Committee that the prohibition of flying over London should be repealed, also the regulations as to aircraft coming into England. Many of the regulations made were made naturally for war purposes. Compulsory landing of aircraft in England, for instance, must affect British aircraft more than any other, as it is probable that if compulsory landing is insisted upon in England, compulsory landing will be insisted upon in other countries. It will be easy to make such regulations when circumstances show that it is necessary. The Committee, moreover, suggest that the powers at present wielded by the Home Office and Board of Trade will be conferred upon the Air Ministry in which I quite concur, but it makes it more necessary to leave the new authority a free hand to make such regulations as circumstances may prove necessary in the future.

Part II, para. 6, Clause 5.—I see no reason at the present time for requiring any Government certificate for private flyers, nor for restricting the use of the flying machine in this respect any more than a motor car or boat, especially as the public is protected by the fact that the flyer himself is always running a greater risk than anyone else. The conditions of the Aero Club certificate have in the past been quite sufficient.

Para. 6, Clause 12.—Ditto. I am not in agreement with the Committee that the Bill should provide any regulations as to the altitude at which pilots should fly. I see no reason to suppose that in the immediate future more machines will be in use at aerodromes than were in use previous to the war, and if circumstances show that a great many more machines are in use, to the danger or annoyance of the public, such regulations as may be necessary may then be made. To hamper at the present time a new development with regulations, which might be quite unnecessary, would probably restrict development.

Para. 6, Clause 14.—I am not in agreement with giving the police such powers of search of aircraft and the persons therein, although it might be well to give the Secretary of State power to make regulations on this point in the future should they be necessary.

Para. 7.—I am not in agreement with any control whatever over aerodromes and landing-places at the present time other than the powers which existed before the war, and which have proved quite satisfactory up to the present time. Any control must tend to hamper the establishment of private grounds and landing places, which is undesirable in the early stages of development.

The above reservations I have made solely with the object of permitting as free as possible development of the use of aircraft. I do not, however, foresee any such development in the immediate future as will necessitate regulations other than those as existed before the War, and, in the absence of more complete knowledge of the subject, I would suggest that, wherever possible, conditions should be left as they are until our experience of the subject has so accumulated that we have a definite knowledge of what regulations are expedient and desirable. (Signed) G. HOLT THOMAS.

## Canadian Air Service

In a message dated December 10th, the *Times* correspondent in Ottawa states that the Royal Canadian Air Service organisation which was begun when the coast of Canada was threatened by German submarines will be temporarily demobilised until the spring, when a decision will be reached as regards a permanent policy. The *Times* correspondent adds that there is a strong feeling among Canadian airmen that the service should be continued, and that the application of aeroplanes should be developed for peace purposes.

## U.S. Aerial Mail Service

AFTER a very successful start the U.S. aerial mail ser-

vice appears to have encountered trouble. According to reports from New York, Capt. B. Lipsner, the superintendent, has resigned on the ground that since the signing of the Armistice the U.S. postal authorities have been experimenting with unsuitable machines and inexperienced pilots. It is stated that the U.S. War Department have turned over to the Post Office a large number of useful machines, but in spite of this the postal authorities, according to Capt. Lipsner, in deference to certain aircraft manufacturers, are contemplating "large and wholly unnecessary expenditures for wholly unnecessary alterations and for special types of machines."

Capt. Lipsner is joining a new concern which has been formed in connection with commercial aeronautics.



# THE ROYAL AIR FORCE

London Gazette, December 11th, 1918.

The following temp. appointments are made at the Air Ministry:—  
**Staff Officers, 2nd Class (T.).**—G. F. Evans (Capt., R.E., Spec. Res.), and is granted a temp. commission as Capt., and to be Actg. Maj. whilst so employed; April 1st.

**Staff Officers, 3rd Class.**—And to be Actg. Capt. whilst so employed if not already holding that or higher rank:—Maj. G. V. Carey; Nov. 9th. Lieut. (Actg. Capt.) J. M. Bell, vice Sec. Lieut. (Hon. Lieut., Actg. Capt.) C. M. Hennell, who relinquishes the actg. rank of Capt.; Dec. 2nd. (T.) Lieut. H. S. Rogers; Oct. 8th.

The following temp. appointments are made:—

**Staff Officers, 2nd Class.**—And to be Actg. Maj. whilst so employed:—Capt. C. C. Treatt; Sept. 16th. Capt. D. MacK. P. Riach, M.B.E.; Nov. 3rd.

**Staff Officers, 3rd Class.**—Capt. H. S. Ward; Sept. 5th. Lieut. (Hon. Capt.) F. C. Townshend, and to be Actg. Capt. whilst so employed; Nov. 29th. (P.) Capt. O. H. Frost, M.C. vice Sec. Lieut. N. C. F. Francis; Nov. 17th. (T.) Capt. F. H. Tyas; Nov. 30th.

The date of appointment of Capt. P. C. Carr is Aug. 7th, and not as stated on page 13,920 of the Gazette, Nov. 26th.

## Flying Branch.

Maj. T. O'B. Hubbard, M.C., to be Actg. Lieut.-Col. whilst employed as Lieut.-Col. (A.); Oct. 12th.

Capt. P. F. Fullard, D.S.O., M.C., to be Actg. Maj. whilst employed as Maj. (A.); Sept. 24th.

Capt. E. P. Will, A.F.C., to be graded for pay as Capt. whilst employed as Capt. (A. and S.); Nov. 6th.

Sec. Lieut. (actg. Lieut., Hon. Capt.) E. F. Ambler retains the actg. rank of Lieut. whilst employed as Lieut. (A.) from (T.); Nov. 23rd.

**Lieutenants to be Lieutenants (A.) from (Observer Officers).**—W. R. McMenan; Oct. 9th. C. E. V. Graham, M.C.; Oct. 15th. W. R. Kellough; Nov. 3rd. S. MacC. Peterkin, M. A. B. Boyd; Nov. 19th.

Sec. Lieuts. (late Gen. List, R.F.C., on prob.) are confirmed in their ranks as Sec. Lieuts. (A.):—G. C. Hinge, R. W. S. Winter, S. E. Calvert; Nov. 16th. C. Watson; Nov. 18th.

The following are granted temp. commissions as Sec. Lieuts. (A.):—A. O. Helps (Lieut., Som. L.I., T.F.), and to be Hon. Lieut.; Oct. 14th. R. L. Barnes (Temp. Sec. Lieut., S. Lan. R.), F. J. Cotsell (Sec. Lieut., Lond. R., T.F.), H. A. Raymond (Sec. Lieut., W. Rid. R., Spec. Res.); Nov. 16th. L. H. MacKay (Lieut., Sco. Rif.), and to be Hon. Lieut.; Nov. 17th.

The following Cadets are granted temp. commissions as Sec. Lieuts. (A.):—T. B. Kelly, F. Kerr, E. Laycock, J. H. Mahoney, V. H. Mayers, D. McR. MacKenzie, J. C. McLachlan, R. F. Nelson, S. H. Phillips, H. A. Phinney, H. G. Pitt, F. Ray, L. A. Robertson, R. W. Robertson, W. J. Rooney, F. R. Rutley, V. W. Shaughnessy, G. P. Silke, D. M. Smith, W. J. Sturgeon, W. L. Warke, J. R. Watt, F. G. Winlow, F. H. Woodman, J. Woods, H. A. Zinck, S. W. Albertson, W. V. Ashforth, J. L. Baird, J. R. Baird, C. C. Brooks, W. G. Burns, I. E. Cameron, H. D. Chandler, J. A. Connolly, R. G. Consterdine, J. W. Crawford, J. P. Davey, L. Driscoll, L. P. Flynn, W. L. Foley, W. B. Fraser, R. R. Fullerton, D. A. Goodine, C. W. Graburn, A. G. G. Greene, H. G. Hanneman, H. D. Hoolihan, H. A. Hubbard, E. B. Hughson, W. J. H. Johnson; Oct. 24th. I. T. Atwood, R. L. H. Barber, I. W. Beverly, C. L. Birmingham, R. F. Brown, F. V. Collins, A. M. Crawford, R. H. Ellard, P. Gallagher, N. H. Glaab, F. M. Gulland, F. J. Ham, A. Hearn, D. D. How, C. A. D. Jennings, E. W. T. Lee, J. G. S. Lennstrand, S. Lestrade, J. D. MacKinnon, R. C. MacKinnon, K. W. Mayhew, D. G. Moore, A. G. McLerie, J. W. Persons, R. G. Pigeon, J. W. Pilgrim, E. J. Pond, J. V. Poulson, L. W. Shelley, L. D. Squire, N. W. Squire, J. E. Waller, J. C. Woodward, H. V. Woolidge, H. O. Wyse, J. W. Smith; Oct. 31st.

Flight Cadets are granted temp. commissions as Sec. Lieuts. (A.):—110299 J. Craig; Aug. 27th. G. D. Dunthorn; Sept. 3rd. J. F. Dodd; Sept. 16th. 911427 G. B. Noble; Sept. 17th. G. R. Stark; Sept. 22nd. J. E. Quinn; Sept. 25th. G. Rowe; Oct. 3rd. B. Buckle, L. Crowther; Oct. 25th. 201546 G. S. Holroyd; Oct. 26th. G. F. Brown; Oct. 31st. D. D. H. Craig; Nov. 1st. C. M. Pavey; Nov. 13th. E. F. Green; Nov. 16th. 18213 T. H. Fuge; Nov. 17th. 18927 R. J. Ewins, 9259 R. W. Hill, 32575 W. R. Gilmartin, 92779 I. Turkington, 137573 L. F. King; Nov. 18th. 171340 A. G. Wright, 112241 H. O. Knapp, 1754 R. M. Tate, 4538 E. P. Brown, 320052 C. Marks, 12027 W. G. Roberts; Nov. 19th. 48358 J. G. Hayes, 10133 J. Simpson, 154677 S. W. Jackson, 137091 A. F. Rowland; Nov. 20th. 93348 W. A. Gallon, 117334 R. F. Tunaley, 86223 T. D. Sterland, 171642 A. R. Giroux, 151398 P. C. Mason, 76618 A. G. Ellis, 13/59222 R. D. Wayman; Nov. 21st. 126320 H. L. Erb, 10482 R. T. Wickham, 17586 L. J. Bradley, 2644 A. T. Jeffrey, 52254 E. B. Saunders, 92527 P. Naylor, 128009 F. J. Walton, 249934 D. Meyers, 303406 J. W. Rowley, 513380 F. W. Weatherdon, 851032 H. Lyne, 10191 J. W. S. Gibbs, 30250 B. Rhodes, 100139 A. Clayton; Nov. 22nd. 460537 F. L. W. Irving, 10/156290 D. W. Thomas, 137047 W. A. S. Whalvin, L. M. Kelly; Nov. 23rd. 117452 W. H. Forster, 12490 C. W. Powell, 95536 C. E. Jackson; Nov. 24th. 57186 H. J. O. Bach, 24796 D. R. Dunn, 71148 J. D. W. Hindson, 98284 B. Bradley, P/6058 C. H. Osborne, 49079 L. H. V. Webster, 110502 C. Hempel; Nov. 25th. 6930 H. J. W. Alexander, 2672 R. E. Williams; Nov. 26th. 80529 E. F. Birkett; Nov. 29th.

The following Flight Cadets are granted temporary commissions as Sec. Lieuts. (A. and S.):—100530 G. McLeish; July 30th (since deceased). 137883 W. A. Saffery; Sept. 21st. T. Blatchford; Oct. 20th. G. Brownrigg; Oct. 28th. 177447 T. E. Williams, 47978 C. C. Rollason, 177225 G. J. Sansum, 29678 J. Mitchinson, 100451 T. E. Cotton; Nov. 13th. 7/21002 H. H. B. Newberry, 8/25324 A. M. Knill, 137971 H. MacD. Leith, 137889 G. E. Barnes, 176482 D. G. B. Theunissen, 176578 H. J. Muir, 176492 J. B. Wilson, 176524 L. G. Green, 137884 A. S. Adams; Nov. 16th. 177403 S. W. Cobb, 178724 P. Roekley, 179083 W. M. Smith, 177310 T. H. Southern, 177572 A. H. Stent, 522070 C. C. Briggs, R. A. Button; Nov. 18th. 173216 C. D. Hurndall, 271036 R. W. Charlton, 177273 R. Harris; Nov. 21st. 302879 S. C. Foster, 96434 K. L'E. Davey; Nov. 22nd. 179143 G. A. Elliott, 179168 M. H. Orway, 179159 R. R. Morton, 179169 J. E. Russell, 179171 H. D. Riddell, 175481 R. E. Napier, 178136 G. Alston, 178140 G. H. Alexander, 176499 H. F. Binstead, 178153 A. H. Bean, 178445 G. F. Blaine, 178296 C. B. Borchers, 178152 A. G. Brencley, 178159 J. S. Cooper, 176469; L. L. Deary, 178162 C. F. V. Duke, 176533 A. R. Hartley, 178181 O. T. Janasch, 178180 E. C. Jennings, 178178 F. Johnson, 178188 T. C. A. Meyer, 178202 G. Parsons, 176616 F. J. Seaton, 137268 V. B. P. MacCallum, 176535 C. D. Heenan, 176536 J. A. Hart, 176530 J. Jones, 178189 B. J. Mayton, 178192 M. C. G. Meyer, 178194 J. D. S. MacCallum; Nov. 23rd. 1534 G. G. Dow, 110936 A. W. Glover, 236755 W. A. Vallance; Nov. 27th. 137805 V. F. Hardy, 176459 A. L. Botha, 174676 J. W. Newdigate, 176483 R. F.

Thesen, 176504 J. G. E. Carrington, 176507 A. G. Cook, 176614 H. McL. Steeples; Nov. 30th.

Sec. Lieuts. (late Gen. List, R.F.C., on prob.) are confirmed in their ranks as Sec. Lieuts. (Observer Officers):—A. Roche; July 26th. A. V. Street; Sept. 18th. G. L. Nicholson; Oct. 1st. E. Teller; Nov. 9th. E. T. Roodcroft; Nov. 11th. V. Sveinson; Nov. 23rd.

Prob. Flight Officer J. Stopford (late R.N.A.S.) is granted a temp. commn. as Sec. Lieut. (Observer Officer); Nov. 11th.

The following are granted temp. commns. as Sec. Lieuts. (Observer Officers):—C. G. Mobbs (Temp. Sec. Lieut., North'd. R.); May 21st. F. Fletcher (Lieut., R.F.A.), and to be Hon. Lieut.; July 13th. S. P. J. Yeates (Sec. Lieut., Devon R., T.F., Sept. 1st); W. A. MacMillan (Lieut., R.G.A., T.F.), and to be Hon. Lieut.; Sept. 18th. J. L. McLennan, M.C. (Capt., A.S.C.), and to be Hon. Capt.; Sept. 22nd. R. P. A. Crisp (Lieut., E. Ontario R., C.E.F.), and to be Hon. Lieut.; Sept. 30th. T. S. Campbell (Sec. Lieut., W. York R., S.R.); C. G. G. Fortune (Temp. Sec. Lieut., Manch. R.); E. Graham (Sec. Lieut., K.O. Sec. Bord., T.F.); H. F. Hicks (Lieut., Nova Scotia R., C.E.F.), and to be Hon. Lieut.; S. P. Molland (Temp. Sec. Lieut., K.R. Rif.); J. W. Kembery (Temp. Sec. Lieut., R.W. Fus.); A. W. Piper (Temp. Sec. Lieut., Essex R.); D. G. Medus (Lieut., R.F.A., T.F.), and to be Hon. Lieut.; A. L. Rice (Lieut., Quebec R., C.E.F.), and to be Hon. Lieut.; S. Toby (Temp. Sec. Lieut., K. L'pool. R.); W. Wilson (Temp. Sec. Lieut., North'd. Fus.); Nov. 8th. R. S. T. Wood (Temp. Sec. Lieut., A.S.C. C. A. Mackintosh-Walker (Capt., Cam. Highrs.), and to be Hon. Capt.; G. B. Baird (Temp. Lieut., R.G.A.), and to be Hon. Lieut.; F. Cartwright (Sec. Lieut., R.F.A., S.R.); G. W. Hammond (Temp. Sec. Lieut., R. Suss. R.); A. E. Baxter, Sec. Lieut., R.G.A., S.R.); Nov. 9th. T. J. Wilson (Sec. Lieut., Lond. R., T.F.); A. V. Bromham (Temp. Sec. Lieut., Midd'x. R.); A. J. Midgley (Temp. Sec. Lieut., Manch. R.); L. Rogerson (Sec. Lieut., N. Lanc. R., T.F.); G. Straw (Temp. Sec. Lieut., R. Ir. Fus., S.R.); S. D. Bickmore (Sec. Lieut., Lond. R., T.F.); Nov. 14th. F. T. Gummer (Capt. Gord. Highrs. T.F.) and to be Hon. Capt.; C. H. Scaddon (Temp. Lieut., York and Lanc. R.), and to be Hon. Lieut. R. L. Sweet, M.C. (Lieut., High. L.I., T.F.), and to be Hon. Lieut.; S. P. Willis (Lieut., A.S.C., T.F.), and to be Hon. Lieut.; J. H. Skinner (Sec. Lieut., R.F.A.); C. P. Stromeyer (Sec. Lieut., R.G.A.); Nov. 16th. C. E. S. Dobbs (Capt., A.S.C.), and to be Hon. Capt.; T. H. Thorpe (Lieut., R. Suss. R., T.F.), and to be Hon. Lieut.; T. W. Watts (Lieut., E. York R., T.F.), and to be Hon. Lieut.; Nov. 23rd. R. E. Shears (Temp. Lieut., Glouc. R.), and to be Hon. Lieut.; Nov. 27th. R. Bowman (Lieut., R.F.A., T.F.), and to be Hon. Lieut.; G. W. F. H. Downer (Lieut., R.F.A.), and to be Hon. Lieut.; F. R. Daniel, M.C. (Lieut., R.F.A., T.F.), and to be Hon. Lieut.; J. L. Gilmour (Lieut., W. Ont. R., C.E.F.), and to be Hon. Lieut.; E. M. Harris (Lieut., R.F.A.), and to be Hon. Lieut.; S. H. Hodges (Lieut., M.G.C.), and to be Hon. Lieut.; T. A. Lloyd-Rees, M.C. (Lieut., M.G.C.), and to be Hon. Lieut.; T. Clarkson (Sec. Lieut., Leic. R., T.F.); B. R. Cozens (Sec. Lieut., Manch. R., T.F., attd. Notts and Derby R.); W. A. G. Hawker (Sec. Lieut., R.F.A., S.R.); D. W. Harris (Temp. Sec. Lieut., R. Dub. Fus., S.R.); V. G. Hodges (Sec. Lieut., S.W. Bord. R., T.F.); E. A. Radcliffe (Temp. Sec. Lieut., K. L'pool. R.); Nov. 30th.

The following Flight Cadets are granted temp. commns. as Sec. Lieuts. (Observer Officers):—F. W. Freeman; June 6th. J. T. Hunter; July 21st. 117170 D. H. Calder, 175817 C. E. M. Howard, 175867 J. S. Tinn, 177130 A. V. Westwood; Oct. 24th. 177194 E. F. Darker, 137711 S. Pike; Nov. 6th. 603094 A. G. Colvin, 110253 C. D. Frogbrook, 3/27162 J. Greenwood, 110112 J. F. F. Liddy, M2/103043 T. T. Ginn, 710457 E. Jolley; Nov. 8th. 510335 G. F. Ward; Nov. 9th. 117532 D. L. N. Grown, 175851 R. H. Coath; Nov. 10th. 198674 H. Chapman, 178670 T. R. Bayston, 137076 J. Bromham, 512506 A. Meville; Nov. 14th. 678059 A. G. Gribble, 2324 E. St. C. Hammet, 772263 F. G. Ellis, 93550 J. P. Henderson, 226105 W. S. Hammond, 529302 R. D. Fish; Nov. 15th. 179979 G. E. Vickers, 136798 D. F. Turpin, 179690, J. S. Gourlay, 179596, L. Bendelow, 179586 H. P. De Roper, 179226 V. A. Wheeler, 176052 E. A. Baker, 76126 W. Gough, 176021 W. B. Mortimer, 4545 G. G. Lane; Nov. 16th. 176754 G. S. Cooper, 176748 G. J. Baragwanath, M280897 W. A. Smailes; Nov. 17th. 415092 J. Porter; Nov. 18th. 425924 M. Cleland, 176427 F. I. P. Pearce, 177181 C. Skinner, 175886 F. M. Purcell, 110691 A. Critchley; Nov. 19th. 176701 R. C. Richardson, 37447 C. E. Tearne, 177339 V. C. Turner, 178583 P. Jackson, 178541 J. H. Lea, 213957 H. Sincok, 178625, J. Haddow, 177442 V. S. Winchester, 45115 D. R. Rathbone, 132800 W. W. Brown, 177418 J. B. McMeekam, 178799 F. T. Bradley, 177712 V. P. Green, 178890 F. R. Barrett, 177633 V. H. Kidney, 177590 W. T. Goodney, 34465 H. C. Alden; Nov. 22nd. 518497 H. S. Marfleet, 190293 G. Tattersall, 178899 A. N. B. Odbert, 178727 G. S. Shackleton, 178725 J. S. Shortt, 178716 R. Kelly, 178711 E. Bickley, 178687 F. J. Hardy, 178778 J. O. P. Barrett, 178653 A. V. Whiteley, 178545 W. M. Nathan, 178527 J. W. Gennard, 178304 J. S. E. Ward, 178303 W. G. Miller, 178291 W. F. Wheeler, 177592 G. Graham, 177560 W. R. Watson, 64490 I. J. Whittall, 2155 F. R. Chapman; Nov. 25th. 107926 W. Atkinson; Nov. 25th. 38364 R. E. Barrett; Nov. 29th. 940269 W. J. Scudamore, 346795 G. Russell, 316121 W. Stevens, 316117 W. J. McIntyre, 200555 F. A. Rennison, 146755 R. R. Hill, 137286 R. A. Rutter, 4522 R. J. Steele; Nov. 30th.

A. E. Osborn (Sec. Lieut., North'd. R., T.F.) is granted a temp. commission as Sec. Lieut. (S.); Oct. 16th.

Sec. Lieut. C. P. King (late Gen. List, R.F.C., on prob.) is confirmed in his rank as Sec. Lieut. (S.); Oct. 16th.

Flight-Cadet D. V. Tandy is granted a temp. commission as Sec. Lieut. (S.); Nov. 13th.

Lieut. V. M. de Balabre is dismissed the service by sentence of a General Court-Martial; Nov. 12th.

Lieut. H. R. Hawkins is removed from the R.A.F.; Nov. 15th.

Maj. R. Loraine relinquishes his commission on account of ill-health caused by wounds, and is granted the hon. rank of Maj.; Dec. 11th.

Capt. W. F. Hellyar relinquishes his commission on account of ill-health, and is granted the hon. rank of Capt.; Dec. 11th.

The following Lieuts. relinquish their commissions on account of ill-health, and are granted the hon. rank of Lieut.: R. E. Caverhill-Cameron (contracted on active service), F. A. D. Grace, M.C., B. Ingram, C. E. Morgan (caused by wounds), S. Wilkins; Dec. 11th.

Lieut. K. S. Morrison (R.F.A., S.R.) relinquishes his commission on account of ill-health caused by wounds; Dec. 11th.

Lieut. A. E. Tyrrell resigns his commission, being physically unsuited to the duties of Pilot or Observer; Dec. 11th.

Sec. Lieut. T. B. Dodwell, D.S.O., relinquishes his commission on account of ill-health caused by wounds, and is granted the hon. rank of Sec. Lieut.; Dec. 11th.





Sec. Lieut. (Hon. Lieut.) R. N. Pennington (Lieut., Quebec R.) relinquishes his commission on account of ill-health; Dec. 11th.

The following Sec. Lieuts. resign their commissions: H. Walker, W. E. G. Wallace; Dec. 11th.

The following Officers are ante-dated in their appointments as Sec. Lieuts. (A. and S.), with effect from dates stated: R. J. Madill; April 26th. T. Nolan; May 30th.

S. M. Linkletter is ante-dated in his appointment as Sec. Lieut. (A.), with effect from Aug. 17th.

The surname of Lieut. (Actg. Capt.) T. B. Tully, A.F.C., is as now described, and not as Bully, as stated on page 11,347 of the *Gazette*, Sept. 24th.

The surname of Sec. Lieut. A. H. Darabrough is as now described, and not as stated on page 12,902 of the *Gazette*, Nov. 1st.

The surname of Sec. Lieut. H. H. Storrs is as now described, and not as stated on page 13,003 of the *Gazette*, Nov. 5th.

The notification in the *Gazette* dated Nov. 22nd, page 13,741, concerning 339419 Flight-Cadet W. W. Coates is cancelled.

The name of 201141 Flight-Cadet Alfred John Sanford is as now described, and not as stated in the *Gazette* dated Nov. 12th, page 13,315.

The notification in the *Gazette* dated Nov. 22nd, concerning 117693 Flight-Cadet S. L. F. St. Barbe is cancelled.

The date of appointment of Flight-Cadet G. W. Smart is May 4th, and not as stated in the *Gazette* dated Aug. 20th.

The notification on page 8,341 of the *Gazette*, July 16th, concerning Sec. Lieut. (Hon. Lieut.) F. Fletcher (R.F.A., S.R.) is cancelled.

The notification page 10,191 of the *Gazette* concerning Sec. Lieut. B. W. MacLeish is cancelled.

#### Administrative Branch.

Maj. (Actg. Lieut.-Col.) R. Cockburn is to be Actg. Col. (without the pay and allowances of that rank) whilst specially employed; Dec. 10th.

J. P. H. Hayes (Temp. Capt., R. Ir. Fus.) is granted a temp. commission as Capt., and to be Actg. Maj. whilst employed as Maj.; Nov. 19th.

Lieuts. to be Actg. Capts. whilst employed as Capts.: W. H. Dean; Sept. 12th. H. W. E. Smith; Oct. 1st.

Sec. Lieuts. to be Actg. Capts. whilst employed as Capts.: (Hon. Capt.) H. Milman, from (T.); Sept. 1st. H. B. Dakin; Sept. 19th.

To be Lieuts., from (A.): Lieut. (Actg. Capt.) H. E. Faulkner, and to relinquish the acting rank of Capt.; Nov. 2nd. Lieut. D. W. D. Kennard; Nov. 22nd.

Lieuts. (O.), to be Lieuts.: J. E. Price; Oct. 25th. C. R. Pilcher; Nov. 25th. H. G. Burgess; Nov. 26th. H. Dandy; Nov. 28th. C. M. Sinclair; Nov. 29th.

The following are granted temp. commissions as Lieuts., with seniority from April 1st: R. B. Collins (Lieut., Norf. R.); July 19th. R. F. Hamlyn (Lieut., Lond. R. (T.F.)); July 27th (substituted for notification on page 11,867 of the *Gazette*, Oct. 8th). E. N. D. Worsley (Lieut., Dor. R.); Oct. 25th. P. H. G. Southwell (Lieut., Unatt'd. List); Oct. 28th.

Sec. Lieut. (Actg. Lieut.) F. C. Wild retains the acting rank of Lieut. whilst employed as Lieut. from (S.O.); Nov. 30th.

The following are granted temp. commissions as Sec. Lieuts., and to be Actg. Lieuts. whilst specially employed: A. G. Bazley, W. A. G. Goldsworthy; Nov. 15th.

C. Lyons (Sec. Lieut., late Gen. List, R.F.C.) is confirmed in his rank as Sec. Lieut.; June 29th.

The following are granted temp. commissions as Sec. Lieuts.: J. F. Groom; Nov. 11th. R. C. Handley-Ensor; Nov. 12th. G. W. Robinson; Nov. 30th.

Hon. Capt. L. T. M. Pennington relinquishes his commission on ceasing to be employed; Dec. 11th.

Lieut. T. Parker-Jervis (Lieut., G. Gds.) relinquishes his commission on account of ill-health contracted on active service; Dec. 11th.

Sec. Lieut. H. R. Oldfield resigns his commission and is granted the hon. rank of Capt.; Dec. 11th.

Sec. Lieuts. relinquish their commissions on account of ill-health, and are granted the hon. rank of Sec. Lieut.: R. B. Campbell, W. A. Greenwood, T. D. Raby (contracted on active service), J. E. Swinburne; Dec. 11th.

Sec. Lieut. R. A. Boxhall resigns his commission, being physically unsuited for the duties of Pilot or Observer; Dec. 11th.

The initials of Capt. C. V. Booth are as now described and not as stated on page 13,611 of *Gazette*, Nov. 19th.

The notification on page 13,743 of *Gazette*, Nov. 22nd, concerning Lieut. S. P. Jacoby is cancelled.

The notification in *Gazette*, Oct. 15th, concerning Sec. Lieut. J. G. Newton is cancelled.

#### Technical Branch.

T. Temple (Temp. Capt., New Armies) is granted a temp. commission as Capt.; Nov. 1st, seniority April 1st.

K. H. McLean (Temp. Lieut., R.N.V.R.) is granted a temp. commission as Capt.; Aug. 21st.

Capt. J. L. Luntley to be Capt. (Grade B), from (Ad.); April 26th.

Capt. G. H. W. Dawson to be Capt. from (S.O.); Sept. 23rd.

Prof. T. Agius is granted a temp. commission as Capt.; Nov. 1st.

C. A. Doherty (Lieut., Can. Res. Arty.) is granted a temp. commission as Lieut.; Sept. 19th, seniority April 1st, and to be Actg. Capt. while employed as Capt.

Lieut. J. A. V. Welsh to be Actg. Capt. while employed as Capt.; Nov. 2nd.

Sec. Lieuts. (Actg. Lieuts.) to be Actg. Capts. while employed as Capts. (Grade B): W. Burrows, from (Ad.), L. A. Lavender, from (Ad.), G. B. Nicol; Sept. 21st. (Hon. Capt.) R. J. Wallace; Dec. 8th.

Sec. Lieuts. (Actg. Lieuts.) (Ad.) to be Sec. Lieuts. and to be Actg. Lieuts. (substituted for the notification in *Gazette* of Oct. 29th): A. Crook, C. A. Assister, L. H. Bainton; Aug. 26th. W. J. Root; Aug. 30th. G. D. G. Hake, H. D. Stanniar, R. N. Tweedy; Sept. 2nd. J. F. Alexander, O. C. Lees; Sept. 9th. J. O. Miles; Sept. 16th.

Sec. Lieut. (Hon. Lieut.) A. J. Cassidy to be Sec. Lieut., from (Ad.); June 13th.

H. J. Lucas (Sec. Lieut., York. R.) is granted a temp. commission as Sec. Lieut.; April 1st.

H. Milman (Capt., R.E.) is granted a temp. commission as Sec. Lieut. (Grade A); May 27th, seniority April 1st, and to be Hon. Capt.

The following are granted temp. commissions as Sec. Lieuts.: Prob. Flight-Officer E. W. Hobbs (late R.N.A.S.); May 10th. E. W. Bell; Oct. 30th.

Sec. Lieuts. (Ad.) to be Sec. Lieuts. (Grade A): T. H. Storer; July 1st. H. M. Russell; Oct. 7th. N. F. S. Hecht; Nov. 10th. F. L. Tomlinson, H. G. Hawkes; Nov. 16th. C. J. Young; Nov. 25th.

Sec. Lieuts. (Ad.) to be Sec. Lieuts. (Grade B): H. G. C. Plumridge; Sept. 5th. P. F. Westerman; Oct. 23rd. D. S. G. Burton; Oct. 26th. J. H. Fraser; Nov. 7th. H. T. Savage, J. W. Savage; Nov. 15th. R. W. Letchford, E. W. Husband; Nov. 17th. (Hon. Lieut.) L. T. M. Griffin; Nov. 22nd.

Sec. Lieut. S. O. Saville is granted the rank of Hon. Lieut.; July 20th.

Sec. Lieut. (Hon. Lieut.) G. H. G. Shepherd (Lieut., Oxf. and Bucks L.I.) relinquishes his commission on account of ill-health; Nov. 9th (substituted for notification in the *Gazette* of Nov. 8th).

Capt. G. D. Etches relinquishes his commission on account of ill-health

contracted on active service, and is granted the hon. rank of Capt.; Dec. 11th.

Lieut. E. W. Bennett, M.C., relinquishes his commission on account of ill-health contracted on active service, and is granted the hon. rank of Lieut.; Dec. 11th.

Sec. Lieut. (Hon. Lieut.) C. M. Hennell relinquishes his commission on account of ill-health; Dec. 11th.

The surname of Sec. Lieut. (Actg. Lieut.) D. G. Bourn is as now described, and not as stated on page 10,011 of the *Gazette* of Aug. 27th.

The surname of Sec. Lieut. (Actg. Lieut.) R. T. Sault is as now described, and not Saunt, as stated on page 13,923 of the *Gazette* of Nov. 26th.

The surname of Sec. Lieut. (Actg. Lieut.) F. J. MacLennan is as now described, and not Machennan, as stated on page 13,745 of the *Gazette* of Nov. 22nd.

#### Medical Branch.

The following are granted temp. commissions as Capts.: R. C. Fuller; Nov. 12th. C. Dickson, M.C. (late Temp. Capt., R.A.M.C.), J. P. Doyle; Nov. 14th.

The following are granted temp. commissions as Lieuts.: D. C. Farquharson, P. J. Herlihy; Nov. 14th.

The notification on page 13,924 of the *Gazette* of Nov. 26th concerning Capt. H. J. Bates is cancelled.

#### Dental Branch.

H. N. Hillier is granted a temp. commission as Lieut.; Nov. 12th.

#### Chaplains' Branch.

The following are granted temp. commissions as Chaplains, with the relative rank of Capts.: Rev. E. H. Wright (late Temp. Chap. to the Forces, 4th Class, A.C.D.); Dec. 6th. Rev. W. H. B. Gipps, Rev. J. T. S. Law; Dec. 8th.

#### Memoranda.

Lieut.-Col. J. H. A. Landon, D.S.O., is granted a permanent commission as Lieut.-Col.; Dec. 10th.

H. S. Rogers (Temp. Lieut., Spec. List) is granted a temp. commission as Lieut.; Oct. 8th, seniority April 1st.

*London Gazette, December 13th.*

The following temporary appointments are made:—

**Staff Officers, 3rd Class.**—And to be actg. Capts. whilst so employed, if not already holding that rank:—Lieut. (Hon. Capt., actg. Capt.) C. Ferris; Oct. 3rd. (Air.) Lieut. (Hon. Capt.) G. M. Smyth; Sept. 7th. (P.) Capt. H. M. Earnshaw; Nov. 4th. Sec. Lieut. (Hon. Lieut.) C. Trenchard; Nov. 7th.

#### Flying Branch.

Majs. to be actg. Lieut.-Cols. whilst employed as Lieut.-Cols. (A.):—A. M. Wilkinson, D.S.O.; April 15th. W. S. Douglas, M.C.; Nov. 9th.

Capt. to be actg. Maj. whilst employed as Maj. (A.):—J. O. Leach, M.C.; July 1st. J. W. Woodhouse, D.S.O., M.C.; Dec. 6th.

Capt. H. M. Morris, D.S.C., to be graded for pay as Capt. whilst employed as Capt. (A. and S.); Nov. 1st.

Lieut. J. H. W. Clarke to be actg. Capt. whilst employed as Capt. (A.); Nov. 12th.

Lieut. M. H. Rattray to be actg. Capt. whilst employed as Capt. (A. and S.); Nov. 22nd.

Lieuts. to be Lieuts. (A.) from (Observer Officers):—A. Shallcross; Sept. 7th. H. Harris; Sept. 17th. J. MacKay; Sept. 22nd. R. J. Morton, W. Hughes, W. F. Woods; Sept. 30th. H. Soulsby; Nov. 9th. T. S. Blair, F. H. Shales, R. B. L. Taylor; Nov. 11th. H. V. R. Hill, S. L. McClenaghan; Nov. 13th. L. T. S. Soot; Nov. 14th.

Capt. D. S. Don to be Sec. Lieut. (A.), and to be Hon. Capt., from (A'ship); Nov. 10th.

The following Sec. Lieuts. (late Gen. List, R.F.C., on prob.) are confirmed in their ranks as Sec. Lieuts. (A.):—F. B. Cox, C. Thomas; July 14th. S. de V. Clarke; Aug. 30th. A. B. Corey; Sept. 6th. L. H. Forbes; Sept. 9th. A. W. Day; Sept. 21st. C. H. Kincaid; Sept. 25th. R. M. King; Sept. 28th. J. Cooke, R. W. F. Dunning; Nov. 8th. G. M. Craig, R. F. J. Doloe, F. C. Littleboy; Nov. 9th. J. Franklin, A. E. R. Trotman, H. Cox, S. Saxon, J. McLennan; Nov. 10th. C. E. Nicholas, S. A. Camp, I. A. Wright; Nov. 11th. M. B. Massey-Hicks, W. T. Randles; Nov. 13th. G. H. Bodington; Nov. 14th. C. G. Shapland, J. Cumming; Nov. 15th. A. B. Richardson, E. L. Roberts, A. Phipps; Nov. 16th. J. E. B. Skinner; Nov. 17th.

The following Prob. Flight Officers (late R.N.A.S.) are granted temp. comms. as Sec. Lieuts. (A.):—G. V. McNaughton; Nov. 8th. A. M. Broad; Nov. 11th. J. M. Simpson; Nov. 13th. W. A. Shaw, R. R. Loveday, R. J. Weaver; Nov. 14th. C. R. Gains; Nov. 15th. G. R. Hasselhuhn; Nov. 17th. W. G. Minnes; Nov. 18th.

The following are granted temp. comms. as Sec. Lieuts. (A.):—L. Hudson (Sec. Lieut., I.A.R.O.); Aug. 4th. V. O. Reynolds (Sec. Lieut., Hamp. R.); Aug. 28th. R. P. Sorge (Temp. Lieut., R. Ir. Fus.), and to be Hon. Lieut.; Aug. 29th. T. Atkinson, M.M. (Sec. Lieut., R.F.A., S.R.); Sept. 4th. J. M. Craig, V.C. (Lieut., R. Sco. Fus., T.F.) and to be Hon. Lieut.; Sept. 5th. R. L. Washington (Sec. Lieut., R. War. R., S.R.); Sept. 7th. H. J. Russell (Temp. Lieut., A.S.C.), and to be Hon. Lieut.; Sept. 12th. E. A. Winter (Sec. Lieut., R.F.A., T.F.); Sept. 13th. G. J. Brown (Lieut., K.O. Sco. Bord. R., T.F.), and to be Hon. Lieut.; Sept. 14th. R. O. Goddard (Sec. Lieut., S. Wales Bord. R., S.R.); Sept. 17th. E. B. P. Davis (Temp. Capt., Essex R.), and to be Hon. Capt.; Sept. 20th. E. H. Cook (Lieut., Gloce. Huss., T.F.), and to be Hon. Lieut.; T. Large (Temp. Lieut., K. L'pool. R.) and to be Hon. Lieut.; Sept. 23rd. T. M. Hodgson (Sec. Lieut., A.S.C.); Sept. 23rd. A. Shepherd (Temp. Sec. Lieut., Lan. Fus.); J. H. W. Goodall (Temp. Sec. Lieut., North'n R., attd. Midd's R.); A. H. J. Howlett (Lieut., Pioneers, I.A.), and to be Hon. Lieut.; Sept. 24th. E. G. Tyler (Temp. Lieut., K. L'pool. R.), and to be Hon. Lieut.; S. Wright (Lieut., North'n R., T.F.), and to be Hon. Lieut.; S. Smith (Lieut., Essex R., T.F.), and to be Hon. Lieut.; Sept. 26th. J. S. Batty (Lieut., R.F.A., T.F.), and to be Hon. Lieut.; Sept. 27th. V. C. Davis (Sec. Lieut., Lond. R., T.F.); L. W. R. Grubb (Lieut., R. Ir. Rif., S.R.), and to be Hon. Lieut.; E. McL. Watson (Lieut., Midd's R., T.F.), attd. Hamp. R.) and to be Hon. Lieut.; Sept. 30th. C. O'B. Dickinson, M.C. (Lieut., R.G.A., S.R.), and to be Hon. Lieut.; Oct. 4th. R. P. Finch (Sec. Lieut., Rif. Brig., T.F.); Oct. 8th. J. L. Fletcher (Sec. Lieut., Dorset R., T.F.); Oct. 10th. F. V. Le Pavoux (Lieut., K.R.R.C.) and to be Hon. Lieut.; R. M. Close (Temp. Sec. Lieut., Notts and Derby R.), E. Phillips (Sec. Lieut., North'd R., T.F.), G. W. Walrod (Lieut., C. Ont. R., C.E.F.), and to be Hon. Lieut.; Nov. 9th. A. Lewin (Temp. Sec. Lieut., R. W. Kent R.), O. M. Martin (Lieut., Manitoba R., C.E.F.), and to be Hon. Lieut.; M. W. Gallop (Sec. Lieut., R.F.A., S.R.); Nov. 10th. A. Dunton (Lieut., Lond. R., T.F.), and to be Hon. Lieut.; H. H. Fox (Sec. Lieut., Lond. R., T.F.); Nov. 12th. L. Kershaw (Lieut., W. Rid. R., T.F.), and to be Hon. Lieut.; J. G. Munro (Temp. Sec. Lieut., Midd's R.); L. B. S. Symonds (Temp. Sec. Lieut., Suff. R.); Nov. 13th. F. L. Wheeldon, D.S.O. (Temp. Lieut., E. Lan. R.), and to be Hon. Lieut.; Nov. 14th. T. C. Knowles, M.M. (Lieut. B.-Col., C.E.F.), and to be Hon. Lieut.; Nov. 15th. R. Massey (Sec. Lieut., Manch. R., T.F.); J. J. Palmer (Sec. Lieut., Lond. R., T.F.), C. H. Shallcross (Sec. Lieut., E. Lan. R., T.F.); Nov. 16th. A. C. McKinnon (Lieut., N. Bruns. R., C.E.F.), and to be Hon. Lieut.; Nov. 18th. C. H. James (late Lieut., R.A.F.), and to be Hon. Lieut.; Dec. 9th.

The following Cadets are granted temp. comms. as Sec. Lieuts. (A.):—D. C. Fuller; Oct. 31st. J. J. Batchelor, D. W. Bell, R. E. Bennett, E. K. Blair, C. M. Bochmer, H. P. Boucher, H. E. Collins, T. G. Davidson, J. R. Dunn, L. E. Edwards, W. B. Fry, J. T. Galligan, C. H. Godfrey, T. Hall-



church, N. J. Hartley, R. T. Jackman, E. Le R. King, C. V. Lane, A. G. Lewis, N. P. Lockwood, M. B. Macauley, C. H. Meyer, D. F. MacArthur, O. S. McCutcheon, A. W. McElroy, C. A. McGilivray, A. H. McKeown, H. J. O'Brien, L. F. Patterson, N. H. Petrimoult, J. W. Phillips, K. B. Read, J. P. Russell, D. Sapte, A. W. C. Trew, O. J. Walsh, E. E. Watts, P. J. Windle, F. W. Young, V. J. Zaczkowski, C. Moyer; Nov. 7th.

The following are granted temp. commns. as Sec. Lieuts. (Obs. Officers):—L. G. Hummerstone (Sec. Lieut., Lond. R.) (since decd.); May 25th. H. W. Deacon (Capt., R.F.A.), and to be Hon. Capt.; Oct. 5th. A. C. Ranshaw (Temp. Sec. Lieut., Linc. R.) is granted a temp. commn. as Sec. Lieut. (S.); Oct. 27th.

Lieut. (actg. Capt.) J. G. Coombe relinquishes his commn. on ceasing to be employed, and is granted the hon. rank of Capt.; Dec. 14th.

The following Lieuts. relinquish their commns. on ceasing to be employed: A. E. Robotham (Lieut., R.G.A., S.R.); June 22nd. F. F. Bonniwell; Aug. 10th. V. B. Persse (Lieut., Can. A.S.C.); Oct. 4th. J. L. Mazucco; Oct. 29th. L. F. Cameron (Lieut., Manitoba R.); Nov. 3rd. L. A. Smith (Lieut., Sask. R.); Nov. 18th. A. N. G. Summers (Lieut., Lancers); Nov. 23rd. T. J. Molony (Lieut., R. W. Kent R.); Nov. 26th. A. F. Wood (Lieut., R.F.A.); Dec. 3rd.

The following Lieuts. relinquish their commns. on ceasing to be employed and are granted the hon. rank of Lieut.:—E. A. Clegg, W. A. MacMichael, G. F. C. Matthews, D. Nelson, J. L. Walton; Dec. 14th.

The following Lieuts. relinquish their commns. on account of ill-health contracted on active service, and are granted the hon. rank of Lieut.:—C. W. Langlands, C. H. Newbold; Dec. 14th.

The following Lieuts. relinquish their commns. on account of ill-health:—H. Blackburn (Dur. L.I.), (Hon. Capt.) G. C. H. Culley (Capt., Norf. R.); Dec. 14th. Lieut. H. W. Watts relinquishes his commn., being physically unsuited for the duties of pilot or observer; Dec. 14th.

The following Sec. Lieuts. relinquish their commns. on ceasing to be employed:—D. F. McColl; Oct. 11th. (Hon. Capt.) J. D. Thomson (Capt., Can. A.P.C.); Dec. 2nd.

The following Sec. Lieuts. relinquish their commns. on account of ill-health and are granted the hon. rank of Sec. Lieut.:—A. D. Clarke, R. G. Fordham, P. V. Frederichsen, A. L. MacLeann, P. R. J. Roberts, J. A. Weller (caused by wounds); Dec. 14th.

The following Sec. Lieuts. relinquish their commns. on ceasing to be employed, and are granted the hon. rank of Sec. Lieut.:—R. D. Brownlie, R. F. Hacon, E. H. Seale; Dec. 14th.

Sec. Lieut. C. Dean relinquishes his commn., being physically unsuited for the duties of pilot or observer; Dec. 14th.

The following are antedated in their appointments as Sec. Lieuts. (A.) as now stated:—R. M. Balfour; June 19th. M. S. Dickinson; July 1st.

The following are antedated in their appointments as Sec. Lieuts. (A. and S.) as now stated:—L. G. Cunningham; April 13th. R. A. Caldwell; May 29th.

The date of appointment of Lieut. (actg. Capt.) E. D. Fanshawe is Aug. 23rd, and not as stated in *Gazette* Sept. 13th.

The notification in *Gazette* May 24th concerning Sec. Lieut. F. W. Scriver is cancelled.

The notification in *Gazette* July 5th concerning Sec. Lieut. M. Fearman is cancelled.

The notification in *Gazette* Nov. 29th concerning Flight Cadet G. A. March is cancelled.

## Administrative Branch.

Capt. (actg. Maj.) C. A. Shaw, D.S.O., to be actg. Lieut.-Col. while employed as Lieut.-Col. from (S.O.); Nov. 7th.

To be actg. Maj. while employed as Maj.:—Lieut. E. P. Manson, M.C.; June 3rd. Lieut. (actg. Capt.) A. C. Rowden; Oct. 7th. Capt. M. C. P. Hamer; Oct. 3rd.

R. A. Buckmaster (Capt., Oxf. and Bucks L.I., T.F.) is granted a temp. commn. as Capt.; June 6th, seniority April 1st, and to be actg. Maj. while employed as Maj.

The following are granted temp. commns. as Lieuts, seniority April 1st and to be actg. Maj. while employed as Maj.:—C. W. Dyer (Temp. Lieut., Midd'x. R.); June 11th. C. E. Hodgson (Temp. Lieut., attd. R. War. R.); July 9th. F. H. Hooper (Lieut., R.F.A., T.F.); Nov. 7th.

H. W. Bowker (Temp. Capt., attd. Suff. R.), is granted a temp. commn. as Capt.; June 27th, seniority April 1st.

Lieuts. to be actg. Capt. while employed as Capt.:—H. V. Rabagliati; May 3rd. H. G. Jones; Aug. 8th. (Hon. Capt.) P. Colbeck, from (T.); Aug. 15th. E. A. Pilippi; Nov. 1st. (Hon. Capt.) A. M. Watson, from (T.); Nov. 21st.

Lieuts. (A.) to be Lieuts.:—(Hon. Maj.) J. Cemlyn-Jones; Oct. 2nd. A. H. Cocking; Nov. 23rd. H. S. Nichols; Nov. 25th. B. Strange; Dec. 2nd.

Lieuts. (O.) to be Lieuts.:—A. G. R. McKenzie; April 1st. F. Crossley; Nov. 2nd. H. W. Hamer; Nov. 19th.

Lieut. A. G. Baker to be Lieut., from (S.O.); Nov. 18th.

The following are granted temp. commns. as Lieuts., seniority April 1st:—F. H. Ward (Lieut., W. York. R., T.F.); July 25th. H. G. Lyne (Lieut., T.F. Res.); Aug. 27th. J. R. S. Borman (Temp. Lieut., attd. Bord. R.); Sept. 2nd. G. Prater (O.M.R. and Capt., Special List), and to be Hon. Capt.; Oct. 14th. I. F. L. Elliot (Lieut., Suff. R., T.F.); Oct. 21st. J. H. Hannay (Capt., A.S.C.), and to be Hon. Capt.; Oct. 29th. R. H. New (Lieut., Wor. R., Spec. Res.); Nov. 11th.

Sec. Lieut. (Hon. Lieut.) A. Colling to be actg. Lieut. while employed as Lieut., from (T.); Oct. 25th.

The following are granted temp. commns. as Sec. Lieuts., seniority April 1st:—S. A. Gordon (Temp. Sec. Lieut., E. Kent R.); June 10th. H. Friend (Sec. Lieut., R. War. R., T.F.); Aug. 22nd. G. T. Armitage (Temp. Sec. Lieut., Lab. Corps); Sept. 11th. I. Coombes (Sec. Lieut., Northn. R., T.F.) is granted a temp. commn. as Sec. Lieut.; Oct. 24th.

The following Sec. Lieuts. (late Gen. List, R.F.C., on prob.) are confirmed in their ranks as Sec. Lieuts.:—A. R. Knowles; July 31st. F. L. Howard; Nov. 24th.

Capt. S. H. Pratt (Lieut., R. Fus., S.R.) relinquishes his commn. on account of ill-health; Dec. 14th.

The following Sec. Lieuts. relinquish their commns. on account of ill-health and are granted hon. rank of Sec. Lieut.:—N. B. Edwards, H. Lancashire, H. F. Phillips (contracted on active service); Dec. 14th.

The following Sec. Lieuts. resign their commns.:—J. A. Esslemont, (Hon. Lieut.) A. H. Searle; Dec. 14th.

The surname of Lieut. W. A. J. Gribble is as now described, and not Cribble, as stated in *Gazette* Dec. 3rd.

The initials of Lieut. C. C. J. Croydon are as now described, and not as stated in *Gazette* July 12th.

## Technical Branch.

Capt. to be actg. Maj. while employed as Maj.:—J. C. Derham, H. A. Hall, W. O. Pearce, E. S. Sturdee; Oct. 31st.

Capt. to be actg. Maj. while employed as Maj. (Grade B):—L. G. Barber, S. Clark; Sept. 12th. J. T. Matthews, from (Ad.); Oct. 31st.

S. Lees (Eng. Lieut., R.N.) is granted a temp. commn. as Capt.; Oct. 25th, seniority April 1st.

Lieuts. (Hon. Capt.) to be actg. Capt. while employed as Capt. (Grade A):—J. C. Wallace; Nov. 1st. L. J. Jones; Nov. 22nd.

Lieut. W. F. Dry to be Lieut. (Grade A), from (A); Sept. 4th.

Sec. Lieuts. to be actg. Lieuts. (Grade A) while employed as Lieuts.:—C. W. Grey, from (Ad.); Nov. 13th. (Hon. Lieut.) C. V. Thornton; Nov. 17th. R. L. Hartley; Nov. 28th.

Lieut. A. Heatherley to be Lieut., from (Ad.); Oct. 14th.

F. W. Nicholson (Lieut., R.E., T.F.) is granted a temp. commn. as Lieut.; Nov. 7th, seniority April 1st.

J. C. E. Price (Sec. Lieut., Lond. R., T.F.) is granted a temp. commn. as Sec. Lieut. (Grade A); July 27th, seniority April 1st, and to be actg. Lieut. while employed as Lieut.

Sec. Lieut. W. H. Hodson to be actg. Lieut. (Grade B) while employed as Lieut.; Nov. 5th.

Sec. Lieuts. (Ad.) to be Sec. Lieuts. (Grade A):—F. A. O'Brien; July 1st. H. M. Russell; Oct. 7th. L. M. Lawlor; Oct. 8th. C. G. Butler, C. C. Newman; Nov. 1st. J. Pritchard, R. L. Willis, R. I. Croucher, E. Ware, H. Lloyd, A. Dalziel; Nov. 2nd. H. R. Mayes; Nov. 8th. H. S. Barton; Nov. 12th. J. Bremner, G. J. Lavery; Nov. 13th. B. Moore, J. Aitchison, G. W. U. Chissold; Nov. 17th. W. H. Heard, P. C. Heming, H. G. Bill, R. A. Wright; Nov. 21st.

The following Sec. Lieuts. (late Gen. List, R.F.C., on prob.) are confirmed in their rank as Sec. Lieuts. (Grade A):—F. A. Wood; June 26th. E. Hattemore; Sept. 16th.

The following are granted temp. commns. as Sec. Lieuts. (Grade A), and with seniority from April 1st:—J. Dudley (Sec. Lieut., R.E., T.F.); Aug. 15th. J. A. Bonnyman (Lieut., Welsh R., T.F.), and to be Hon. Lieut.; Aug. 27th. A. H. Varian (Temp. Sec. Lieut., Gen. List); Nov. 21st.

The following are granted temp. commns. as Sec. Lieuts. (Grade A):—S. Pope (Temp. Sec. Lieut., R.E.), H. D. McL. Hayward (Temp. Sec. Lieut., R.E.); Nov. 2nd.

S. Empsall (Temp. Sec. Lieut., R.E.) is granted a temp. commn. as Sec. Lieut.; Oct. 30th, seniority April 1st.

Sec. Lieuts. (Ad.) to be Sec. Lieuts. (Grade B):—A. F. Potter; Aug. 8th. A. C. Smart; Sept. 13th. W. Ponting; Oct. 5th. C. Duffy, A. H. Warriner; Oct. 8th. H. E. Stiles; Oct. 10th. S. T. Fowler, W. J. Lawrence, E. H. Hughes, A. M. Watters, H. D. Olson; Oct. 15th. T. B. Nelson; Oct. 22nd. H. V. Lawley; Nov. 4th. W. C. Hanney; Nov. 6th. P. O. Patterson, W. H. Shayler; Nov. 13th. C. C. Lindsay, A. H. V. Kingdon, E. B. Hodgkinson, M. Laidlaw, S. E. Knight, F. P. P. Hammond; Nov. 17th. P. C. Beardwood, E. J. H. Bluet, C. W. Daniel, H. Owen, T. H. Rudd, G. Burrows, V. G. Jeffreys, J. A. Peoples, T. L. Grey (and to be Hon. Lieut.); Nov. 21st.

The following Sec. Lieuts. (late Gen. List) R.F.C., on prob. are confirmed in their rank as Sec. Lieuts. (Grade B):—G. J. Mayer; April 1st. F. S. Willis; Nov. 21st.

To be Sec. Lieuts. (Grade B) and to be Hon. Lieuts. from (A):—Lieut. G. S. George to be Sec. Lieut., and to be Hon. Lieut., from (A.); July 28th. H. A. Cole; Nov. 6th. G. A. Gillings; Nov. 17th. J. D. Robinson; Nov. 21st.

Lieut. G. M. Roberts to be Sec. Lieut. (Grade B), and to be Hon. Lieut. from (A. and S.); Nov. 21st.

Lieuts. (Ad.) to be Sec. Lieuts. (Grade B):—L. T. G. Jefferson, and to be Hon. Lieut.; Nov. 13th. (Hon. Capt.) C. C. Clark, and to be Hon. Capt.; Nov. 21st. F. H. Jones (actg. Lieut.) (Ad.) to be Sec. Lieut. (Grade B); Nov. 11th.

To be Sec. Lieuts. (Grade B), from Sec. Lieuts. (Obs. Officers):—N. W. Walmsley, M.C., and to be Hon. Lieut.; July 20th. J. L. Tait; Nov. 16th. D. J. Palmore-Bedford; Nov. 29th.

J. F. Farquharson (Temp. Sec. Lieut., Lab. Corps) is granted a temp. commn. as Sec. Lieut.; Nov. 4th.

Sec. Lieuts. relinquish their commns. on ceasing to be employed:—(Hon. Lieut.) F. A. I. Richardson (Lieut., Linc. R.); June 26th. (Hon. Capt.) W. R. Browne (Capt., Wilts. R.); Nov. 25th.

Maj. J. R. Potter relinquishes his commn. on account of ill-health, and is granted the hon. rank of Maj.; Dec. 14th.

The following Capt. relinquish their commns. on account of ill-health, and are granted the hon. rank of Capt.:—A. J. Dronsfield, G. Wilder; Dec. 14th.

Sec. Lieut. J. C. McInnes relinquishes his commn. on account of ill-health and is granted the hon. rank of Sec. Lieut.; Dec. 14th.

The following Sec. Lieuts. (Hon. Lieuts.) relinquish their commns. on account of ill-health:—W. R. C. Hodge (Lieut., Kent Cyclists Battn.) (caused by wounds), F. L. Robinson (Lieut., R.H.A.) (contracted on active service), T. C. L. Wood (Lieut., Northd. Yeo., T.F.); Dec. 14th.

## Medical Branch.

The following are granted temp. commns. as Capt. (late Temp. Capt., R.A.M.C.); Dec. 5th.

The initial of the following are as now described, and not as stated in *Gazette* Nov. 26th:—H. C. Bazett, M.C., J. A. Watson, J. D. Bangay, H. M. Holt, J. B. Stevenson.

E. O. B. Carbery (Fleet Surg., R.N.) is as now described, and not as stated in *Gazette* Nov. 26th.

The Corps of A. Leitch, Capt., is R.A.M.C., and not R.A.M.C., T.F., as stated in *Gazette* Nov. 26th.

## Dental Branch.

The following are granted temp. commns. as Capt. (Oct. 1st, with seniority from April 1st):—H. F. Barge (Temp. Capt., Gen. List, Dental Surg.); C. L. Colbran (Temp. Capt., Gen. List, Dental Surgeon); C. J. Crocker (Temp. Capt., Gen. List, Dental Surg.); J. Speak (Temp. Capt., Gen. List, Dental Surg.); T. F. Healey (Temp. Capt., Gen. List).

D. H. W. Williamson (Temp. Lieut., Gen. List, Dental Surgeon), is granted a temp. commn. as Lieut.; Oct. 1st, with seniority from April 1st.

## Chaplain Branch.

Rev. S. L. Clarke (Chap. In. Cr., R.N.) is granted a permanent commn. as Chaplain, with the relative rank of Lieut. Col.; Nov. 22nd.

Rev. S. L. Clarke to be Deputy Chaplain-in-Chief with the acting relative rank of Col.; Dec. 12th.

W. J. Selby (Chap. to the Forces, 1st Class (T.F., attd. Glos. Regt.) is granted a temp. commn. as Chaplain, with the relative rank of Col.; Dec. 10th.

The following are granted permanent commns. as Chaplains, with the relative rank of Capt.:—Rev. M. H. Edwards (Chap., R.N.), Rev. W. T. Rees (Chap., R.N.); Nov. 22nd.

The following are granted temp. commns. as Chaplains, with the relative rank of Capt.:—Rev. C. H. Collier (Temp. Chap., R.N.), Rev. H. A. Thomas (Temp. Chap., R.N.), Rev. D. H. A. Williams (Temp. Chap., R.N.); Nov. 22nd. Rev. P. R. Butler (Temp. Chap. to the Forces, 4th Class, A.C.D.), Rev. W. Galpin; Dec. 10th.

## Memoranda.

Capt. (actg. Lieut.-Col.) E. P. A. Melville to be Hon. Maj.

Sec. Lieut. (Hon. Lieut.) C. H. Blakeway to be actg. Capt. whilst holding a special appointment at the Ministry of Munitions; Nov. 1st.

Sec. Lieut. R. F. Ellis relinquishes his commn. on account of ill-health contracted on active service, and is granted the hon. rank of Sec. Lieut.; May 22nd (substituted for notification in *Gazette* May 21st).

Maj. H. G. Viset, Tiverton, relinquishes his commn. on account of ill-health, and is granted the hon. rank of Maj.; Dec. 14th.

Sec. Lieut. L. H. Corbould-Ellis relinquishes his commn. on ceasing to be employed; Sept. 28th.

Sec. Lieut. D. McK. Sheridan to take rank and prec. as if his appointment as Sec. Lieut. bore date Oct. 26th.



## THE R.A.F. COASTGUARD AND ANTI-SUBMARINE PATROL

THE magnificent work of the British aerial coastguard has so far gone largely unrecorded, partly because it was not spectacular and partly because its methods had to be kept secret. Day after day, winter and summer, from dawn to dark, the coastal patrol was kept up, only dense fog or a full gale interrupting it. When the results are considered it should be observed that the effectiveness of the Royal Air Force anti-submarine patrol is not to be gauged by the number of submarines sunk—notable as that was—but by the fact that the attacks on shipping during flying hours were reduced to a minimum. It was the negative result that mattered; the hourly patrolling that kept the submarine well under for fear of detection, thus enabling shipping to pass in safety.

There were two kinds of anti-submarine patrol, intensive and extensive. The intensive kind was concerned with spotting and escorting in the war channel. This was an area extending from the coast line to a line marked in some parts with numbered buoys about ten miles out. All convoys kept within this line. For inshore work from three to five miles the D.H.6 machine was used. The old D.H.6, familiarly known as the "Clutching Hand" and as a "School 'Bus," was capable of about 1½ hour's patrol on the average. It was altered in design for this work and turned also into a single-seater, the patrols being usually done in pairs. Further out again went the seaplanes and the D.H.9, often beyond the 30-mile line. The D.H.9 had the advantage of greater speed than any other anti-submarine patrol craft, and was, therefore, particularly useful in heavy weather or in a sudden emergency demanding swift action.

Beyond this again went flying boats and airships. The war channel thus was patrolled by every form of aircraft, though many went further to sea than the safety line for shipping. German submarines were nearly always sighted within the war channel area. They knew, of course, of its existence, and came there for their prey.

All aircraft on these R.A.F. patrols were under the direction of the senior naval officer of the group to which the squadrons were attached. In this way the machines were used in conjunction with the surface craft and the hydrophone stations, and there was, in fact, splendid and wonderfully effective collaboration between the forces of the sea and the forces of the air. The study of the movements and methods of enemy submarines had become such an exact science that it was often possible to tell in advance when and where to expect the next attack. How true this is may be gauged by the fact that there were scarcely any successful attacks on shipping (attacks after which the submarine escaped) during flying hours. This year the Germans initiated an air offensive against our anti-submarine patrol. It took the form of very fast monoplanes, heavily armed. Consequently we retaliated by escorting our flying boats and other craft with a purely fighting machine, such as the Sopwith Camel.

The following figures give a slight idea of the work of the R.A.F. anti-submarine patrol. They refer only to the half-year since the R.A.F. became a separate force—from April 1st to October 31st last:—

Total number of hours flown .. ..	39,102
Hostile submarines sighted .. ..	216
Hostile submarines attacked .. ..	189
Hostile aircraft attacked .. ..	351
Hostile aircraft destroyed .. ..	184
Hostile aircraft damaged .. ..	151
Hostile mines spotted .. ..	69
Hostile mines destroyed by aircraft .. ..	32
Total number of bombs dropped .. ..	15,313
(This is equal to 661½ tons.)	
Total convoy flights .. ..	3,441
Total photographs taken .. ..	3,440

This brief record of the R.A.F. coast patrol in home waters does not touch upon the vast air patrol organisation in the Mediterranean, and it includes a final period during which German submarine work had greatly decreased.

The R.A.F. anti-submarine patrol developed out of the R.N.A.S. anti-submarine campaigns at Dunkirk and the Dardanelles. Remembering that in the sea-going patrol work it was often necessary to be able to pick up bearings out of sight of land, to be able to recognise sections of the coastline from great heights and distances, and to be familiar with different types of sea-going craft, it will be understood that it was fortunate that the R.A.F. could draw upon the R.N.A.S. for the preliminary establishment of the great system. This was in 1916, and the first type of machine to be used was the old float seaplane, built by the Short Brothers, and the Sopwith "Baby," seaplane and the Wight seaplanes were also used towards the end of 1916. Depth charges were dropped from those machines and also bombs, but the naval demand for depth charges became so great that finally only bombs were used. Short seaplanes were in use from 1916 till the end of the War, not only round our coasts, but also in the Mediterranean.

The large flying boat was a natural development of the seaplane. They made their first appearance on the East Coast in the early part of 1917, and were used for the same type of work as seaplanes, but had the advantage of greater power and greater endurance in bad weather. The early form, known as the H.12, had a rounded hull, but later the big F type was produced, fitted with two 350 h.p. Rolls-Royce engines, with a V-shaped hull. Like the seaplane, the flying boat can alight on the water, and plans were made for fitting them with hydrophones, so that while "sitting" on the waves their occupants could listen for submarines.

It was not until the submarine menace became exceedingly grave that land machines were brought generally into operation against the U-boats. That was in the early months of this year. Aerodromes were put up all round the coasts, and squadrons established. The types of machines chiefly used were the D.H.6 and the D.H.9, though a few squadrons, mostly on the East Coast, used the Blackburn Kangaroo, the F.E. 2B, and the D.H.4.

Nothing perhaps proves more conclusively how very great the British output of aircraft was, than the fact that, in spite of the heavy claims of Flanders, Mesopotamia, Palestine, and Macedonia, and of the training schools, squadrons of land planes for coastal patrol were established by the dozen during the last year of the war, and never lacked the finest personnel in the world in the shape of Royal Air Force flying men.

### German Navigation Rules for Seaplanes

A WEEK or so before the armistice negotiations, the late German Government drafted an order regulating the navigation of seaplanes and ships when meeting at sea. A draft order which was sent round to various shipping societies for their remarks was in the following terms:—

(1) Ships in relation to Aircraft in the Air.—Ships when approaching aircraft in the air are not obliged to give way. Aircraft in the air always have to give way to vessels in the water and to avoid dangerous positions.

(2) Ships in relation to Aircraft (Seaplanes) on the Water.—  
(a) Seaplanes on the water, with engine turned off, are incapable of manœuvring. All vessels must give way to the seaplane, and, if this can be done without danger, on the weather side. (b) Seaplanes with their engines running are only capable of limited manœuvring power. They must, where possible, avoid the neighbourhood of vessels. (c) When the course of a seaplane and a vessel cross, so that the maintaining of their course would lead to collision, the seaplane must turn in the wind, and the ship give way to the seaplane.

### Conditions in the W.A.A.C.

At Goole on December 11th Edith and Constance

Jackson, daughters of Mr. Edward Jackson, formerly chairman of Goole Council, were called upon to answer a charge of deserting from the Women's Army Auxiliary Corps. The summonses were dismissed, the chairman stating that, considering the evidence, the magistrates were of opinion that the girls had lawful reason for leaving.

Mrs. Hopley, Administrator at Gateshead, said statements as to the depot at Gateshead, a workhouse, being dirty were untrue. She admitted in cross-examination that on the day the girls arrived two beds had been vacated by girls suffering from scabies, but it was not intended that they should have been reoccupied by the defendants. There were also cases of influenza, but the patients were kept isolated.

Giving evidence, Edith Jackson spoke of the condition at Nottingham and Sheffield being bad. On the girls making a complaint about the beds at Gateshead, they were told that those who complained were "sneaks and rotters." They persisted in their complaint, and later were told that the administrator would instruct that the beds be disinfected next day. On arriving home they wrote to the Chief Administrator in London giving their reasons for leaving.



## SIDE-WINDS

AT a very pleasant little function in the works at Kingston the other day, Mr. Sopwith reminded us of one or two little things. It was only seven years ago that the firm came into existence at Brooklands and about five years since Mr. Sopwith made what was then thought a big plunge. They took over the Kingston Skating rink. Then the War happened and when the Armistice was signed, the company had far outgrown the huge works which followed the skating rink episode and at Ham further enormous extensions had to be entered upon. At the end of the War there were 3,500 hands, of whom 1,000 were women, and Mr. Sopwith's appreciation of the latter was summed up in the word "Splendid." Commercial aviation is bound to come, is the solid opinion of Mr. Sopwith, but with ever so sanguine a view he still cautions the impetuous not to go off at the problem at half-cock. Until trading and sporting planes fill the gap the problem is to keep the hands employed and even increase them.

WITH this idea in mind the Sopwith company have arranged to turn out the A.B.C. motor bike "in quantities," and it looks to us as if they were on to a very good thing. There is natural attraction to the company in this engine, as it was, with an A.B.C. that Harker won the Michelin prize in 1911 in 8 hours 23 min., and the two firms have worked wholeheartedly together since then, whilst all the time the Sopwith air strainers have been turned out in increasing numbers, the engine experimental department has never ceased being active. Lightness, Mr. Sopwith claims, is illustrative of their original motto "Strength with Efficiency," and be it noted Mr. Bradshaw, the designer of the A.B.C. engine was the pioneer of light air-cooled high-speed motors. Another strong point with Mr. Sopwith is competitions. He thoroughly believes in them as a necessity, whether you win or lose matters little, as you get the experience. Therefore the company intend pushing hard in this direction, continuing their vigorous competition policy. So altogether business looks very healthy for the firm, what time developments in the aviation world are kept pace with. A unique fact is attached to the Sopwith company which, we believe, is the only firm which has during the War been solely employed upon their own designed machines, culminating in the A.B.C. engine Sopwith "Snipe," which for speed and climb easily takes first place—viz., speed 156 m.p.h., and climb 10,000 ft. in 4½ minutes. It was on a "Camel" that Major Barker raised such a profound hump amongst the sixty Hun machines which he fought, it will be remembered, in one bunch, bringing down ten of his opponents! So here's the best of luck to the new departure of the Sopwith company and if we are a judge of anything, we fancy there'll be a good many pilots who will ask very firmly for an A.B.C. motor bike and, moreover, will see that they get it.

THE East London Rubber Company's head office and warehouse in Great Eastern Street will be closed for the Christmas holidays from the evening of December 24th until the morning of the following Monday, December 30th.

THE Hurlingham Aircraft Company, we understand, has now been converted into a limited company, with a view to extending operations, and in future is to be known as the Gerrard Engineering Works, Ltd. Mr. Hurlin has been appointed chairman of the board, to which Mr. W. Ingram has also been appointed.

### PUBLICATIONS RECEIVED.

*More Tommy's Tunes.* Composed, collected and arranged by F. T. Nettleingame, late R.F.C. London: Erskine Macdonald, Ltd. Price 2s. 6d. net.

*The Cadet's Refresher.* By B. C. and D. Hastings: Brown and Woodley. Price 2s. 6d.

*The Triplane and the Stable Biplane.* By J. C. Hunsaker, D.Sc. London: James Selwyn and Co., Ltd. Price 3s. net.

*Blake of the R.F.C.* By Lieut.-Col. H. Curties. London: Skeffington and Son, Ltd., 34, Southampton Street, W.C. 2. Price 3s. 6d. net.

*Avions Allemands, Zeppelins et Moteurs.* By Lean Lagotgette. Editor, Ed. Blondel la Rougery. Paris: *l'Aerophile*, 33 rue François. Price 15 fr.

*Calendar, 1919.* C. Portass and Son, Broadfield Road, Sheffield.

*Raf Ravings.* By Chas. Payzant. London: Charles D. Clayton, Ltd., 52, Shaftesbury Avenue, W. 1. Price 1s. 9d.

### Catalogue.

*Steel for Motor Cars and Aircraft.* Edgar Allen and Co., Ltd., Sheffield.

## COMPANY MATTERS

### Crossley Motors, Ltd.

THE directors of Crossley Motors, Ltd., announce that owing to the negotiations necessary under the Munitions and Finance Acts the balance-sheet as at October 31st has not yet been completed. The result of trading will allow of a dividend of 10 per cent. (less income-tax).

### S. Smith and Sons (Motor Accessories), Ltd.

THE accounts for the year ended July 31st, 1917, show, after providing for excess profit duty and depreciation, the net profit for 1917 was £48,190. This, together, with the balance from 1916, made a total of £54,918. For the year ended July 31st, 1918, after providing for excess profits duty and depreciation, the net profit was £48,788, which, together with the balance from 1917, made £61,515. Final dividend of 10 per cent., free of tax; to special reserve for income-tax and contingencies account, £22,571; forward, £8,644.

### The Sunbeam Motor Car Co., Ltd.

THE 14th ordinary general meeting of the company will be held at the Victoria Hotel, Lichfield Street, Wolverhampton, on December 20th.

The meeting has been delayed a little beyond the usual time in the expectation that the accounts for the financial year ended August 31st last would be ready for presentation, but the directors very much regret that it has not been found possible to complete them in time. The work has been unusually heavy, but it is anticipated that the delay will only be a matter of a few weeks, and the directors hope to have the accounts ready to submit to the shareholders early in the new year. They are, however, satisfied that the profits which will ultimately be available justify them in recommending the following appropriations:—1. To confirm dividend on preference shares paid April 15th, 1918, £900; 2. To confirm interim dividend paid on ordinary shares April 15th, 1918 (free of tax), £12,000; 3. To pay the balance of dividend on preference shares, £900; 4. To pay a dividend of 10 per cent. (free of tax) upon the ordinary shares, making with the dividend already paid 15 per cent. for the year, £24,000; 5. To pay a bonus of 1s. per share upon the ordinary shares (free of tax), £12,000. Total, £49,800. During the year the directors elected Mr. Charles N. Wright, a partner in the firm of Messrs. Fowler, Langley and Wright, the company's legal advisers, to a seat on the Board rendered vacant by the death of the late Alderman John Marston.

### White and Poppe, Ltd.

THE report of White and Poppe for the three years ended July 31st, shows a profit, after providing for munitions levy, excess profits duty etc., of £118,500; balance brought forward from 1915, £7,706. Dividends and directors' fees for 1916 and 1917, £19,319; dividend of 8½ per cent. on the participating preference shares, and 15 per cent. on the ordinary shares for the year ended July 31st, 1918; to income-tax reserve, £10,000; to general reserve, £9,095; forward, £28,595. The directors propose, subject to the consent of the Treasury being obtained, that the amount of £59,095 appropriated to general reserve be capitalised and distributed among the shareholders in the proportion of one ordinary share for every two preference shares held, and one ordinary share for every one ordinary share held.

If you require anything pertaining to aviation, study "FLIGHT'S" Buyers' Guide and Trade Directory, which appears in our advertisement pages each week (see pages lvii, lviii, lix and lx).

## FLIGHT

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